NOVEMBER 10, 1952

NEWS ISSUE

Electrical World

Price 35 Cents

A McGRAW-HILL PUBLICATION

President Wescott (left) of Ebasco Services congratulates his new Executive VP, F. C. Gardner . . . . . .Page 28

FPC: The Accent Is on Constructive Regulation . . . Page 22

Another Year of Heavy Capital Spending . . . Page 50

Effective operation of "hold-closed" principle with FR-1 recloser is pointed out by G. G. Auer, G-E Distribution Engineer, during discussion of its applications with A. K. Bushman, Manager, Industry Engineering & Sales, and W. J. McLachlan, Manager, Electric Utility Engineering.

Coordinated protection with hold-closed reclosers helps

REDUCE SYSTEM INVESTMENT, IMPROVE SERVICE

Since the "hold-closed" principle of recloser operation was first advanced by G-E engineers, installations by several electric utilities have proved so successful that widespread adoption is planned on many systems.

"Hold-closed" operation utilizes the recloser only for its important primary purpose of clearing transient faults. Set for one or two instantaneous openings, it holds closed instead of open if the fault persists. The function of isolating persistent faults is delegated to inexpensive fuse cutouts. The recloser resets automatically when the fault is cleared.

With properly coordinated fuses easily provided at main and branch line sectionalizing points, hold-closed reclosers make possible greatly simplified system protection. Fewer reclosers are needed, with consequent savings in equipment investment. The reduced number of recloser operations means less maintenance expense. Fuses usually confine outages to short sections and faults are more readily located, resulting in improved service.

A detailed discussion of the benefits of this new concept of system protection is given in a recent paper. Write for GER-131A, General Electric Company, Schenectady 5, New York. 501-210

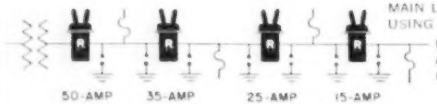
MORE POWER TO AMERICA

GENERAL ELECTRIC

Simple conversion to hold-closed operation is made by adding pin to General Electric FR-1 Recloser. Conversion can easily be made in the field. At right, chart shows possible $960 saving on equipment used on a 50 mile length of 3-phase line.

COST COMPARISON—CONVENTIONAL vs. HOLD-CLOSED OPERATION

50 MILES—3-PHASE LINE



MAIN LINE SECTIONALIZING USING CONVENTIONAL RECLOSERS

Reclosers:	12 at	$130 =	1560
Arresters:	21 at	34 =	714
Cutouts:	Nil	=	
			$2274*

MAIN LINE SECTIONALIZING USING "HOLD-CLOSED" RECLOSERS

Reclosers:	6 at	$130 =	780
Arresters:	9 at	34 =	306
Cutouts:	12 at	19 =	228
			$1314*

*Conversion Equipment Extra

VOLUME 138, NO. 19

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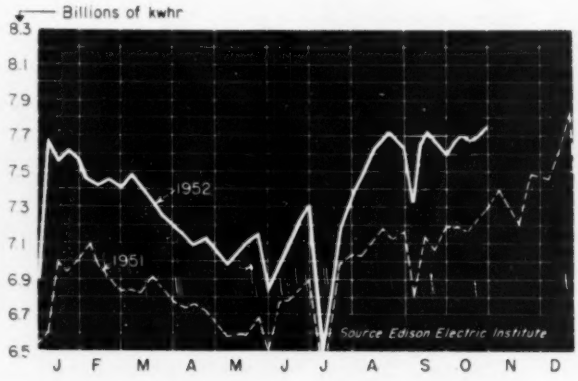

Output Week Ended Nov. 1—7,752,925,000 Kwhr

Per Cent Change From Previous Year

	Total US	New Eng.	Mid. Atlan.	Cent. Ind.	West Cent.	South-east	South Cent.	Rocky Mount.	Pacific NW	Pacific SW
Nov. 1	+5.9	+8.7	+4.0	+6.2	+5.9	+8.6	+5.6	+6.8	-4.4	+10.7
Oct. 25	+6.4	+10.6	+4.8	+5.9	+8.8	+10.2	+5.8	+6.9	-6.4	+10.3
Oct. 18	+7.4	+7.7	+5.4	+8.7	+9.7	+10.8	+7.1	+8.9	-6.1	+10.4

Electric Power Statistics

		Latest Month	Preceding Month	Year Ago
Peak Load (Million Kw)	Aug.	69.8*	67.2	64.4
Capacity (Million Kw)	Sept.	78.40	78.31	74.29
Production (Billion Kwhr)	Aug.	34.36	32.52	32.40
Hydro		8.52	8.74	7.82
Fuel		25.84	23.78	24.51
Fuel Consumption				
Coal (Million Tons)	Aug.	8.57	7.90	8.96
Oil (Million Barrels)		5.38	4.38	5.12
Gas (Billion Cu Ft)		104.97	98.71	88.46
Sales (Billion Kwhr)	July	27.70	27.67	26.50
Residential		7.50	7.44	6.55
Commercial		5.30	5.00	4.70
Industrial		12.64	13.20	13.13
Other		2.25	2.03	2.12
Net Income Class A & B Companies ($ Million)	Aug.	68.67	64.62	53.33
Estimated Dec. 52 Peak (Million Kw)	Aug.	80.0	80.1	79.7
Kwhr per Residential Customer (12 Month Average)	July	2,104	2,091	1,933
Revenue per Kwhr Residential Service (12 Month Average)	July	2.78¢	2.78¢	2.84¢
Canadian Production (Billion Kwhr)	Aug.	4.97	4.84	4.60

Business Statistics

FRB Industrial Production Index†††	Sept.	228	218	223
Gross National Product Annual Rate ($Billion)	3rdQtr.	344.0	343.2	337.1
E. W. 5 Industry Production Index	Sept.	123.5	120.5	123.5
ENR Construction Cost Index††	Oct.	123.3	122.9	114.6
BLS Consumer's Price Index	Sept.	190.8	191.1	186.6
NEMA Insulation Materials Sales Index†	Aug.	451	470	539
NEMA Electric Appliance Sales Index†	Aug.	236	234	210
NEMA Household Refrig. Sales Index†	Aug.	148	197	97

* Estimated. † 1936=100 †† 1949=100 ††† 1937-39=100 (Unadjusted)

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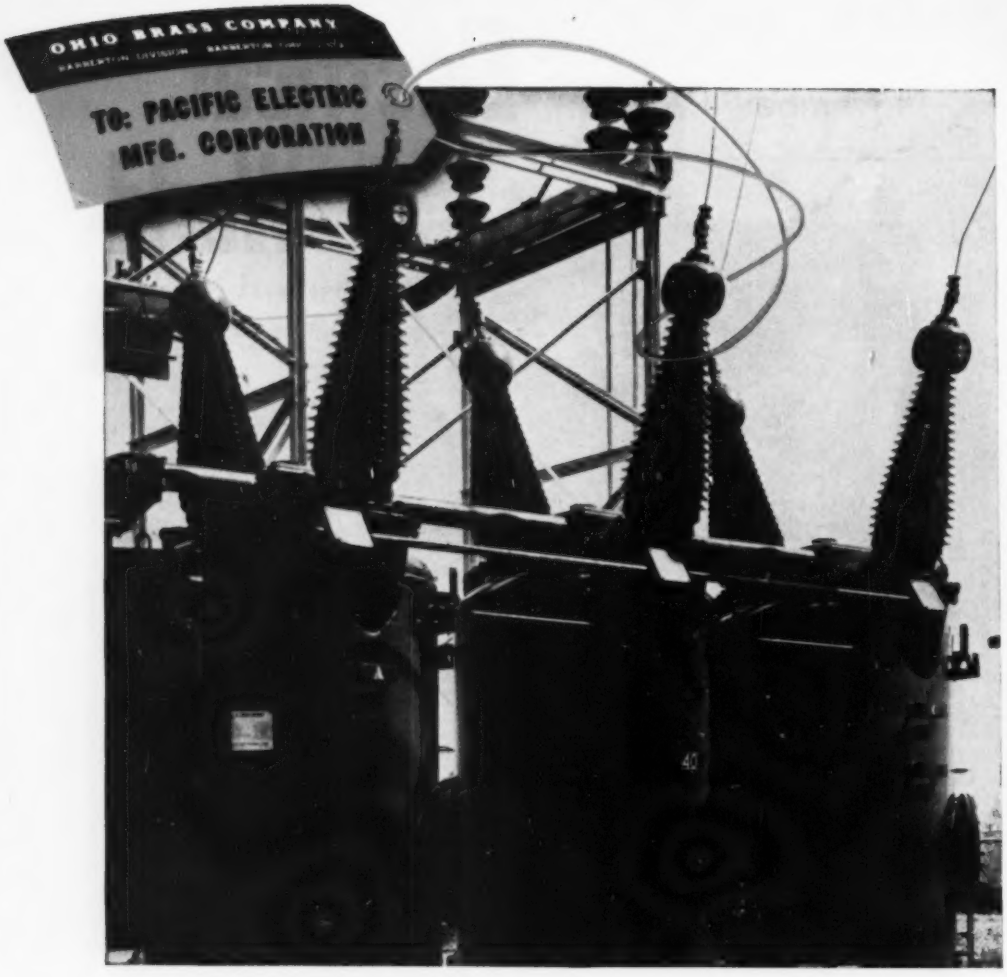
Electrical World • Vol. 138, No. 19 Nov. 10, 1952
Member ABC and ABP

Published weekly by McGraw-Hill Publishing Company, Inc. James H. McGraw (1860-1948), Founder. **Publication Office, 99-129 N Broadway, Albany 1, N. Y. Executive, Editorial and Advertising Office: McGraw-Hill Building, 330 W 42nd St., New York 36, N. Y.** Curtis W. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President; Publication Division; Ralph B. Smith, Vice-President and Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions: Address correspondence to Electrical World—Subscription Service, 99-129 North Broadway, Albany 1, N. Y. or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address.

Subscriptions are accepted only from executive, supervisory, and engineering personnel in electric utilities, manufacturing companies, and related fields. Position and company connection must be indicated on subscription orders.

Single copies 25¢. For the United States and possessions $6 a year, $9 for two years, $12 for three years. Canada, $7 for one year, $11 for two years, $14 for three years. (Canadian money, at par.) Other Western Hemisphere, $15 for one year, $25 for two years, $30 fo three years. All other countries $25 for one year, $40 for two years, $50 for three years. Entered as second-class matter, November 16, 1936, at the Post Office at Albany, N. Y., under the Act of March 3, 1879. Printed in USA. Copyright 1952, by McGraw-Hill Publishing Company, Inc. Permission required to reproduce any of contents.



One of several 5-cycle high-speed reclosing 138-kv oil circuit breakers supplied to a leading Midwest utility by the Pacific Electric Mfg. Corporation. According to its builder..."the entrance bushings of these circuit breakers are subjected to minimum mechanical impact at closing because the stationary contact structures are of the nested sliding-shoe (finger) type. In the closed position the bushings are not subjected to the forces of kick-off or bumper springs because all operating forces are applied external to the tanks. Other Pacific features include maximum simplicity of interrupter design, only one moving part in each tank," . . . And

O-B BUSHINGS

ONE OF THE FINEST COMPONENTS OF ANY CIRCUIT BREAKER

Ohio Brass

MANSFIELD - OHIO

4123-H

THE ELECTRICAL WEEK

The Issue's News Highlights—International Joint Commission approves construction of power dam on the St. Lawrence. This tosses the ball to Federal Power Commission, which must decide whether to approve New York Power Authority's request for a license to build U. S. half of the project.

Depa has ordered utilities in Pacific Northwest to cut firm power to large industrial customers 10% beginning Nov. 17. Voluntary measures will be relied on to cut less essential commercial and residential use.

Off the Washington Wire—As elsewhere, election results are the top topic of conversation at federal power agencies in Washington. Favorite game is to try to figure the personnel shuffling that will go on under the new President.

Another big question is how much will the election outcome influence the federal budget requests which are now being shaped up. As usual, most power agencies are asking more funds for the next fiscal year than for the present one. However, there is still time for some drastic changes before the final version of the budget is completed in early January.

Wage cut is in store for workers whose wages are tied to cost-of-living index unless the index rises a full point for the month ending Oct. 15. A further decline is possible.

Lt Gen Lewis A. Pick, chief of Army Engineers, will retire Nov. 30. . . . Everett L. Hollis resigns as AEC general counsel.

Newly formed Ohio Valley Electric Corp gets Ohio PUC approval to issue $20 million (200,000 shares $100 par) of capital stock to be sold to 15 electric companies which combined to supply power to AEC plant.

Fire almost completely destroys Line Material's Jeffery-Dewitt porcelain plant at Kenova, W. Va. Damages exceed $1 million according to W. D. Kyle, Jr, president and general manager of Line Material Co.

Aluminum Co of Canada will ship 77 million lb of aluminum to U. S. during December 1952-June 1953 to partially make up for losses in domestic aluminum output caused by drought-induced power shortages in Columbia and Tennessee Valleys.

Central Louisiana Electric's employees sell 91,000 lamps in one month during a lamp bulb campaign. One line foreman alone, was responsible for the sale of 11,000 lamps during that month.

Manitoba Government offers $53.2 million for Winnipeg Electric Co. It offers shareholders $20.6 million in cash, together with certificates of interest in shares of transit and gas utilities operated by the company in the Winnipeg area. It also proposes to assume the bond indebtedness of the company amounting to $27.6 million and the preferred shares totaling $5 million.

Seven to Go—EW's Sept. 1 issue (p 16) had a story on missing Commonwealth & Southern Corp stockholders. Two have been found. Now a third has been located, Miss Lillian I. Ferguson, 273 Almon St., Halifax, Nova Scotia. Do you know any of the other seven?

From New England—Connecticut Light & Power files an application with Norwalk Zoning Commission to use Manresa Island as site for $15-million steam plant. Commission will take no action till public meeting is held in December . . . Western Massachusetts Electric places in operation 50,000-kw unit at West Springfield steam station, bringing total capacity of plant to nearly 100,000 kw . . . Cold storage concerns in Rhode Island are after lower electric rates . . . Connecticut Light & Power chalks up record hourly peak load of 434,000 kw on Oct. 28. This is 42,000 kw above top of Dec. 17, 1951.

From Southeast—Alabama Power plans to build steam plant with an initial capacity of 150,000 kw in vicinity of Gorgas . . . Central Louisiana Electric places in operation a new 24,000-kw unit at Coughlin station near St. Landry, La.

From the Far West—Pacific P&L spins first of two generators at new Yale Dam on Lewis River . . . Hawaiian Electric sells privately $4-million first mortgage bonds, Series H, 3½% due 1982.

Labor—Michigan's Attorney General Frank G. Millard rules Detroit Edison strike is illegal (see page 35) because a state-supervised strike poll is necessary in order to legalize the walkout. Local 223, UWUA-CIO, maintains the state law does not apply in this case because company is engaged in interstate commerce.

About 300 maintenance men (mostly electric) of Memphis LG&W division strike. No union is involved but men demand a 10% wage increase.

Litigation—District of Columbia Court of Appeals sets aside injunction granted a month ago and opens way for Pennsylvania W&P to press suits against Consolidated G&EL, Baltimore, for damages in excess of $19 million. It asks FPC and Maryland PSC to submit plans for distributing $3-million refund to electric customers of Consolidated within 60 days.

N. S. Hibschman, school of engineering dean, Pratt Institute, Brooklyn, N. Y., is appointed assistant secretary of AIEE, effective Jan. 1, 1953.

Congratulations—Union Electric of Missouri elects E. R. Kropp vice president, succeeding Charles E. Michel who is to serve the company as a special consultant . . . John V. N. Granger, Stanford, Calif., Research Institute, is selected as "outstanding young electrical engineer for 1952" by Eta Kappa Nu, national honorary society for electrical engineers.

Obituary—Rear Admiral W. T. Cluverius (retired), 77, president of Worcester Polytechnic Institute, died Oct. 28.

THE ELECTRICAL WEEK

CONTINUED

Interior Department has "no objection" to development of 465,000-kw Feather River hydro project by the State of California . . . Mutual Security Agency grants $29,000 for electric power engineering study to be carried on in cooperation with the Nationalist China government on Formosa.

Consolidated Gas, Electric Light & Power Co. of Baltimore will offer $16,484,300 of 15-year convertible debentures to its common-holders on the basis of a $100 debenture for each 30 common shares held on about Dec. 1.

Transformer size records are being broken every day. Biggest transformer in service is 190,000 kva on Detroit Edison's system. A 220,000 kva is on order and 300,000 kva is in prospect for TVA.

Consumers Power and UWUA-CIO agree to 4¢ an hour cost-of-living increase, retroactive to Oct. 6.

There will be no more field tests of big breakers on BPA system for some time, perhaps indefinitely, because of an extensive mechanical failure of a large power transformer. Failure was traced to stresses growing out of the tests.

Two proponents of keeping the Yakima County (Wash.) PUD inactive and allowing Pacific P&L to continue serving the area were running ahead 2½ to 1 in the election for PUD commissioners.

Stephen B. Robinson, Los Angeles attorney, is hired by California Water Project Authority to act as special consultant in state's investigation of the feasibility of acquiring ownership of Central Valleys Project from the federal government.

Frank Watts, 74, formerly assistant to president of "Farm Journal," died in Dunedin, Fla., on Oct. 28.

IN THE INDUSTRY

Two unexploded bombs rested late Wednesday afternoon under the deal by which six Washington public utility districts would buy the properties of Puget Sound Power & Light Co for approximately $100 million.

The one bomb was the results of the elections of commissioners to the boards of several of the PUD's involved in the proposed purchase. The other was the decision of Judge E. F. Hanify of the Suffolk County Superior Court of Boston on a restraining order prohibiting the management of the company from executing the purchase agreement.

In two counties in particular, Kitsap and Skagit, the results of the election could put an end to the deal. In each county the PUD has been committed to the purchase by a 2-to-1 vote. In each opponents of the deal have been backing a candidate favoring a vote of the people on the purchase agreement. Election of either of these "people's vote" candidates would reverse the membership of that board. As the law prevents a board from committing the PUD to any action after their term of office expires, the purchase must be completed by midnight Nov. 30. Otherwise the agreement must be renegotiated.

In Kitsap County . . . C. Jack Jones, favoring purchase of the utility, was seeking reelection over C. E. Ferguson, a "people's vote" candidate. With half the precincts heard from Ferguson was leading 6,917 to 4,523. A similar contest was going on in Skagit County whose PUD is a key unit in the 6-PUD group.

Judge Hanify had informed both parties following hearings on Oct. 30 and 31 that he would hand down his decision before Nov. 9. He can remove the restraining order or issue a preliminary injunction. In either case a trial is likely to follow in the Merits Court. This trial might not reach the docket until next year.

Stockholders Spurn WWP Offer . . . Rallying point of the opponents of the sale to the PUD's has been the offer of Washington Water Power Co's president, Kinsey Robinson (EW, Oct. 20, p 90), to buy the stock of PSP&L and merge the latter into his company. However, Puget stockholders agreed with Pres Frank McLaughlin that the sale to the PUD's would be more advantageous to them. At a meeting in Boston on Oct. 27 they voted 1,828,781 to 48,510 shares to accept the PUD offer. There are but 2,177,879 shares outstanding. (EW, Nov. 3, p 82).

At this time the future of Puget Sound Power & Light is as uncertain as it has been for the past ten years. Either bomb is likely to explode. Then what happens will make news in the industry for years after.

TECHNICAL NOTES

ARCHER E. KNOWLTON

Human ears are most sensitive to high frequencies and therefore material and fabrication of transformer noise barriers should be such as to attenuate the higher frequencies.

Extra strength and toughness in pole-hole diggers, power take-offs and four-wheel drives are insurance against burdensome maintenance. These devices are used hard and abused easily.

Truck platform at least 24 in. above ground level will protect the operator against thrown rocks when a pole-hole digger tosses the removed earth.

Radiant superheaters facilitate provision of generous heat absorbing surfaces in the furnace with improved furnace cleanliness and reduced exit temperatures along with high steam temperature over wide load range.

Higher voltages for distribution along with more grounded objects and conductors on the poles are accentuating the hazards—and the indispensability of gloves, rubber protective equipment and live-line tools as companions of unceasing alertness.

Coal sizing is reported to be ideal for spreader stokers if one-third is crushed to ¾-½ inch, one-third ½-¼ inch and the remainder smaller. Segregation, however, makes uniformity in distribution all but impossible.

Election of Gen Dwight D. Eisenhower means . . .

A New Look in Federal Power Policy

There will be some changes made in the administration of federal power policy.

Victory of Dwight D. Eisenhower puts the Republican Party at the helm of the executive branch of the government for the first time in 20 years. This portends shifts in attitude, if not legislative policy, on federal power development.

Because he made few campaign commitments in the electric power field, the Republican President-elect has practically a free hand to develop administrative policy in his own way. His speeches indicate he has no detailed knowledge of the many problems involved, and his decisions will likely be made on the broad general principles of his philosophy.

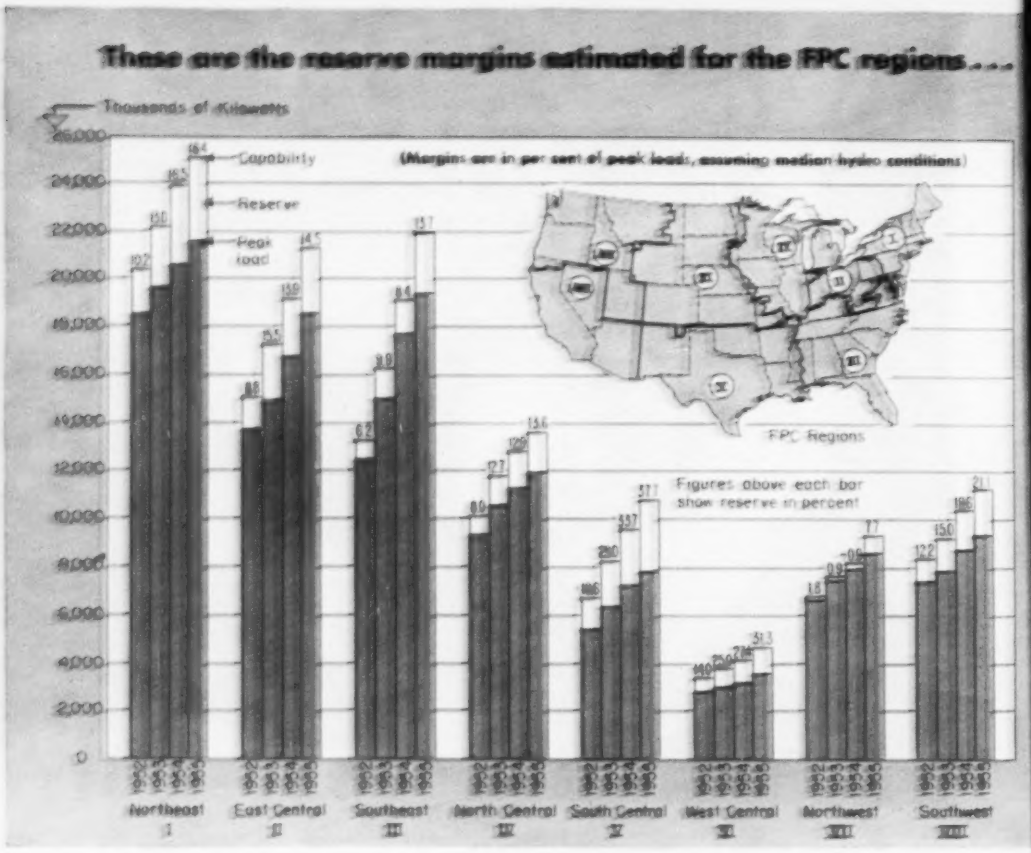
Needs Interpretation . . . As with any man in the Presidency, Eisenhower will have to rely heavily upon advisers to interpret the power matters that come before him. Washington observers now foresee an intra-party struggle between the conservative and liberal Republicans for top advisory and policy-making posts. Outcome of this struggle, if it does take place, will have an important bearing on the government's role in electric power development.

Still another factor is the new President's relations with Congress. If Ike is able to reach an understanding on broad policy with Congress, he will have a far easier time putting into effect a large portion of his programs. Particularly on federal power development, House and Senate appropriations committees go a long way toward calling the plays.

Based on Eisenhower's campaign speeches, it is reasonable to believe his election will have the following effects on power matters:

- The federal government will continue to assume the major responsibility for large multi-purpose projects, but may take less interest in single-purpose hydroelectric projects.
- Government's responsibility in construction of transmission lines may be clarified and scaled down.
- State and local governments will have larger roles in planning, constructing and operating power facilities.

(*Continued on page* 10)



EEI Predicts U. S. December Reserve

EEI's estimate of output for the next four years . . .

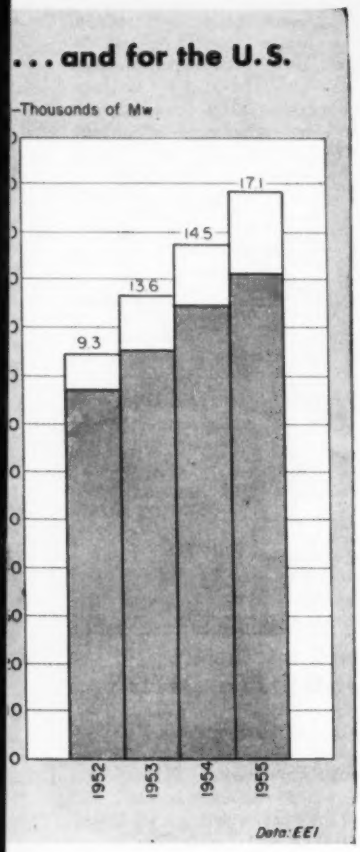
(Millions of Kwhr)

Region	1951	1952	% Inc	1953	% Inc	1954	% Inc	1955	% Inc	1956	% Inc
I Northeast	88,880	94,545	6.4	101,877	7.8	106,809	4.8	111,633	4.5	116,826	4.7
II East Central	71,008	76,697	8.0	83,553	8.9	95,431	14.2	107,021	12.1	116,625	8.4
III Southeast	57,211	65,285	14.1	77,513	18.7	93,681	20.9	109,826	17.2	118,850	8.2
IV North Central	44,035	47,700	8.3	54,798	14.9	59,705	8.9	61,946	3.8	67,544	9.0
V South Central	20,989	25,285	19.6	30,736	13.8	42,114	14.6	46,479	10.4	51,026	9.8
VI West Central	12,030	13,199	9.7	14,418	9.2	15,685	8.8	17,105	9.1	18,440	7.8
VII Northwest	33,726	39,435	16.9	44,115	11.9	48,299	9.5	51,273	6.2	53,786	4.9
VIII Southwest	35,855	40,300	12.4	43,379	7.6	47,915	8.8	50,956	7.9	54,000	6.0
Total United States	**369,737**	**409,438**	**10.7**	**456,389**	**11.1**	**508,919**	**11.5**	**556,839**	**9.4**	**597,097**	**7.5**

Note:

1. 1951 represents actual operating data.
2. % Increase = Percentage of increase Over Preceding Year.
3. Survey covers 98% of the energy output of electric power systems in the United States.

. . . and for the U.S.



Will Be 9.3%

Edison Electric Institute predicts that average December reserve capability for all United States power companies will be 9.3%. The prediction is made in the institute's 12th Semi-Annual Electric Power Survey. December peak load was put at 76,049,000 kw, a gain of 11.7% over 1951.

As indicated in the table at the left, the EEI Survey estimates total U. S. output for this year at 409,452,000,000 kwhr, an increase of 10.7% over last year.

A slow but steady increase in annual national load factor was forecast. A factor of 61.5% was estimated for this year. This is expected to go to 61.8 in 1953, 62.4 in 1954, 63.4 in 1955,and 63.7 in 1956.

IJC Gives OK on St. Lawrence

Commission approves applications for hydro development.

U. S. has to name agency to carry out its part of project

Governments of the United States and Canada have been given the go-ahead on the 2 million-kw St. Lawrence hydroelectric development, a vital part of the long planned Seaway project.

The International Joint Commission, meeting in Montreal Oct. 29, approved the application of both governments to proceed with the huge power development. No decision has yet been made as to the agency that will construct the U. S. portion of the project. Canada has already named the Ontario Hydro-Electric Power Commission to build and operate the works on the Canadian side of the river.

Time Extension . . . Federal Power Commission, which is reconsidering an application filed by the Power Authority of the State of New York for construction of the U. S. portion, has extended the time in which protests may be filed. Original cutoff date for protests was Oct. 30. The time has been extended till Dec. 1 at the request of a number of interested parties.

Interior Department, which favors federal construction of the St. Lawrence power project, is understood to be among those which have sought to delay FPC action on the New York application. Interior would probably be marketing agent of the power if the U. S. project is constructed with federal funds.

FPC in 1950 turned down the New York Power Authority application to build the $225-million project, and urged that the federal government step in to build both the navigation and power-features of the seaway project. Congress, however, voted this year not to make a final decision on this FPC recommendation. At this point, Canada proposed to go ahead with an all-Canadian navigation project, but begged the U. S. to cooperate in building the power project.

Pledges Cooperation . . . President Truman promised cooperation, and went ahead to apply to the International Joint Commission for permission to build the power works on the U. S. side of the river. Meanwhile, FPC agreed to reconsider its early decision on the New York application and joined to recall it from a U. S. Court of Appeals.

As a result of IJC's action, the Canadian government awarded a contract for the raising of Gut Dam on the St. Lawrence River. The 900-ft dam below Prescott, Ont., has been blamed by some property owners for high water levels on the Great Lakes which have damaged homes. The contract was awarded the day after IJC gave its approval for the development of the Seaway project, in keeping with a commitment made by Canada.

Depa Orders Cut of 10% on Firm Power in NW

Signalling the first time firm power will be trimmed in the Pacific Northwest, Defence Electric Power Administration issued orders on Oct. 30 to curtail firm loads by 10%. This move will be made Nov. 17 to maintain reservoir levels for operation of the vast Northwest Power Pool through the winter.

According to E. J. Dryer, deputy administrator, the percentage will be cut from 1951 power-use base and will save about 100,000 kw. Issuance of order EO-4A came as a result of a telephone conference between Depa and regional pool advisors.

Voluntary cuts will affect an estimated 1,000 plants which use more than 8,000 kwhr per week. To coordinate the curtailment Depa has set up an advisory board including J. Frank Ward, Tacoma City Light, Frank M. Warren, Portland General Electric Co, and Dr William A. Dittmar, Bonneville Power Administration. Other members are Marshall L. Blair, Washington Water Power Co, and Owen W. Hurd, Benton Rural Electric Association.

Dryer added that any interruptible loads still on the lines must come off by Saturday, Nov. 1, but said "we suspect all interruptible customers already have been dropped by utility companies."

Eisenhower Election

(*Continued from page 7*)

• Role of the government in rural electrification will be little changed except that loans for generating and transmission purposes may be subject to more searching review.

Applying these principles to specific projects, the results shape up something like this:

• The huge Hells Canyon Project on Snake River in Idaho has almost no chance of approval within the next few years. Privately constructed smaller dams may take its place.

• Power Authority of the State of New York or the private companies will be given the go-ahead on construction and operation of the St. Lawrence Power Project and redevelopment of power potentials at Niagara Falls.

• Projects now under construction will be completed in an orderly manner, but those in the planning stage will be subject to longer examination and local and state governments will be requested to give more cooperation.

A mass exodus of top government officials is assured. New men coming in will have different approaches to power matters. These new attitudes among the administrators are equally as important as power policy written into legislation.

New Faces . . . Here are some of the personnel changes to expect:

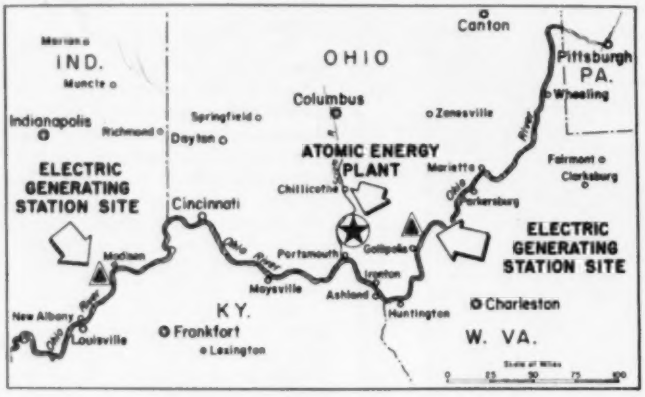
1. Out will go Interior Secretary Oscar L. Chapman, leading exponent of the paternalistic role of the federal government in power development. In will come some Western Republican such as Governors Dan Thornton of Colorado, Frank A. Barrett of Wyoming or Val Peterson of Nebraska, who will have a greater leaning toward state and local participation in power projects.

2. Out will go Federal Power Commission Chairman Thomas Buchanan, proponent of extended federal regulation in the gas and electric utility fields. In will come some Republican possibly with experience in state utility commission work.

3. Out will go Securities and Exchange Commission Chairman Donald C. Cook, an avid Stevenson supporter. In will come a Republican chairman—possibly Richard B. McEntire, a commission member from Kansas who has strong supporters in the Eisenhower camp.

At Rural Electrification Administration, head man Claude Wickard's term runs till 1955. However, he might be inclined to step down if it becomes apparent he is not wanted. This would open the way for other shifts at that agency.

How quickly and smoothly the new administration can move in to establish its own policies and practices depends almost wholly upon the men Eisenhower chooses to fill the jobs. How much these policies and practices reflect his own philosophy will depend in large part on his personal leadership at cabinet and lower levels.



Ohio Valley Chooses Its Sites

Ohio Valley Electric Corp announced last week it would start construction immediately on the two largest steam electric plants in the world. The first, of 1.2 million kw, will be built on the Ohio River near Madison, Ind., and the second, of 1 million kw, on the Ohio near Gallipolis, Ohio. (See map, above, and EW, Oct. 27, p 7.)

The two plants will supply the full power requirements of the $1-billion uranium diffusion plant to be built by Atomic Energy Commission just north of Portsmouth, Ohio.

Construction of the Gallipolis plant will be handled by Ohio Valley, of the Indiana plant by Indiana-Kentucky Electric Corp, a subsidiary.

Other Sites Considered . . . Ohio Valley engineers had studied locations on the Ohio River from Wheeling, W. Va., to Louisville, Ky., a company announcement said. Economic factors such as nearness to coal were determinants in the ultimate choice of sites. AEC power requirements (1.8 million kw contracted for a period of 25 years) were split between two plants for several reasons. They included:

• Security. Power source was decentralized as protection against bombing or natural disaster.

• Early completion. By constructing two plants simultaneously, the company will be able to put the eleven 200,000-kw units on the line at an earlier date than if only one were built.

• Coal. By separating the plants, the company is able to tap several major coal fields instead of one.

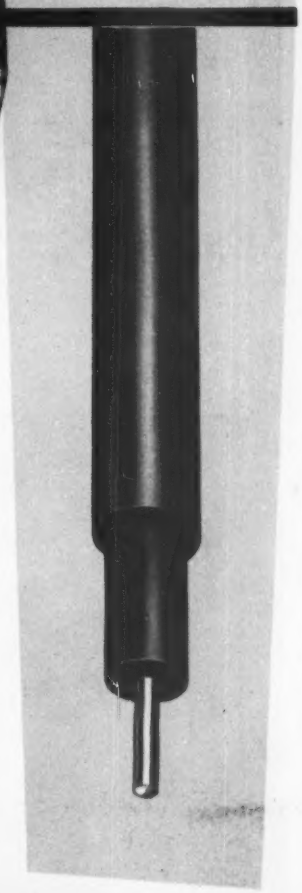
Construction and interim operating power of 465,000 kw will be required by AEC before the new stations can be completed. Two 132,000-kw lines are being built to tie in with the systems of the 15 companies participating in Ohio Valley so this interim power can be supplied.

Break Ground Soon . . . Ground will be broken for both power plants in the very near future, according to Philip Sporn, president of Ohio Valley. The first 200,000-kw unit at the Indiana plant is scheduled to be in operation by January, 1955. The other 10 units will go on the line at staggered intervals up to June 1956.

When in full operation, the plants are expected to supply 15 million kwhr annually to the AEC project.

One phase of final inspection is the electrical testing, under water, of every foot of Rome RoZone. When the safety gate is lowered, high voltage current is applied to each reel of cable.

8 AWG solid street lighting cable, RoZone insulated with RoPrene (Neoprene) sheath—2001 volts and up.



Rome RoZone®

Superior Ozone-Resistant Insulation Deserves Your CONFIDENCE

What Its Uniformity Means to You...

Q: What is meant by uniformity?

A: Uniformity in service performance . . . foreknowledge of dependability, carrying with it the assurance that every length of RoZone insulated cable measures up to the same high standard of quality.

Q: Of what advantage is such uniformity?

A: Every time you install RoZone, you can be sure of identical performance under comparable service requirements.

Q: How does Rome Cable control uniformity?

A: By carefully supervised workmanship, backed by rigid manufacturing specifications and long experience in the exact compounding of quality insulation.

Q: How do we measure uniformity?

A: Through long-time laboratory and service tests, as well as a specially developed ionization level test which actually predetermines the insulation's behavior in service. Further, sampling tests for ozone resistance, electrical stability in water and aging properties are standard procedures.

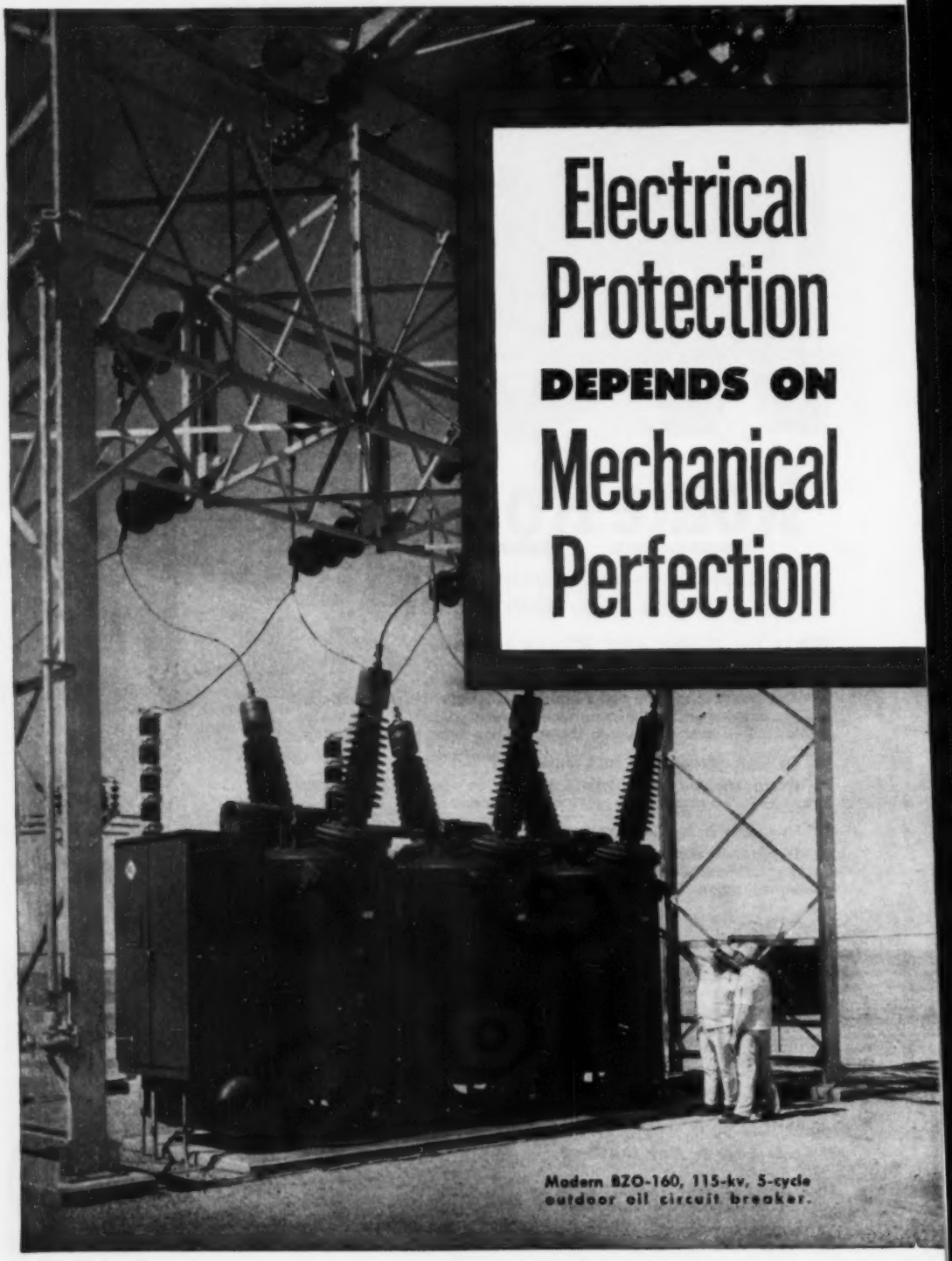
In short, RoZone is a premium insulation, precisely compounded, manufactured on modern equipment, time-proven in service and step-by-step tested for high *uniformity of quality. It deserves your fullest confidence.*

It Costs Less to Buy the Best

RoZone is approved and accepted by leading utilities, industrials and consulting engineers

ROME CABLE
Corporation
ROME • NEW YORK
and
TORRANCE • CALIFORNIA

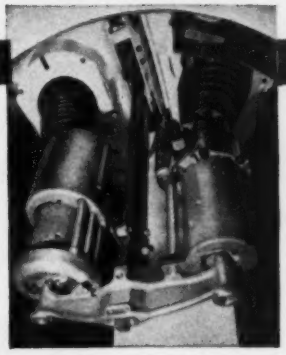
ROME CABLE ROME, N.Y.



Modern BZO-160, 115-kv, 5-cycle outdoor oil circuit breaker.

Time-Proved
Mechanically Trip-Free
Pneumatic Operator

Electrical protection depends on *fast breaker operation under all conditions.* Only mechanically trip-free operation assures this because breaker contacts open independently of the operating mechanism. And such operation provides fast recoupling for immediate reclosing.



Time-Proved
Turbo-Ruptor* and *Turbo-Jet
Interrupting Devices

Electrical protection depends on *fast circuit interruption.* A-C low arc energy devices employ directed oil turbulence for swift arc extinction; self-cleaning, low resistance contacts assure low operating temperature. The result is minimum contact and oil deterioration.

Time-Proved
Electrical and Mechanical
Pre-Shipment Testing

Electrical protection depends on *unfailing, coordinated operation.* A-C breakers are designed to provide that operation and are thoroughly tested to assure it. Before shipment, electrical and mechanical operation is verified by rigid checks and special test equipment.

Turbo-Ruptor and Turbo-Jet are Allis-Chalmers trademarks.

Type BZO OIL CIRCUIT BREAKERS

Details Contribute to Dependability

Double-hinged, gasketed mechanism housing doors . . . white enameled tank interiors . . . large, hinged tank manhole covers — these and many other details provide easy accessibility for inspection and contribute to the over-all reliability of Allis-Chalmers circuit breakers.

RATINGS

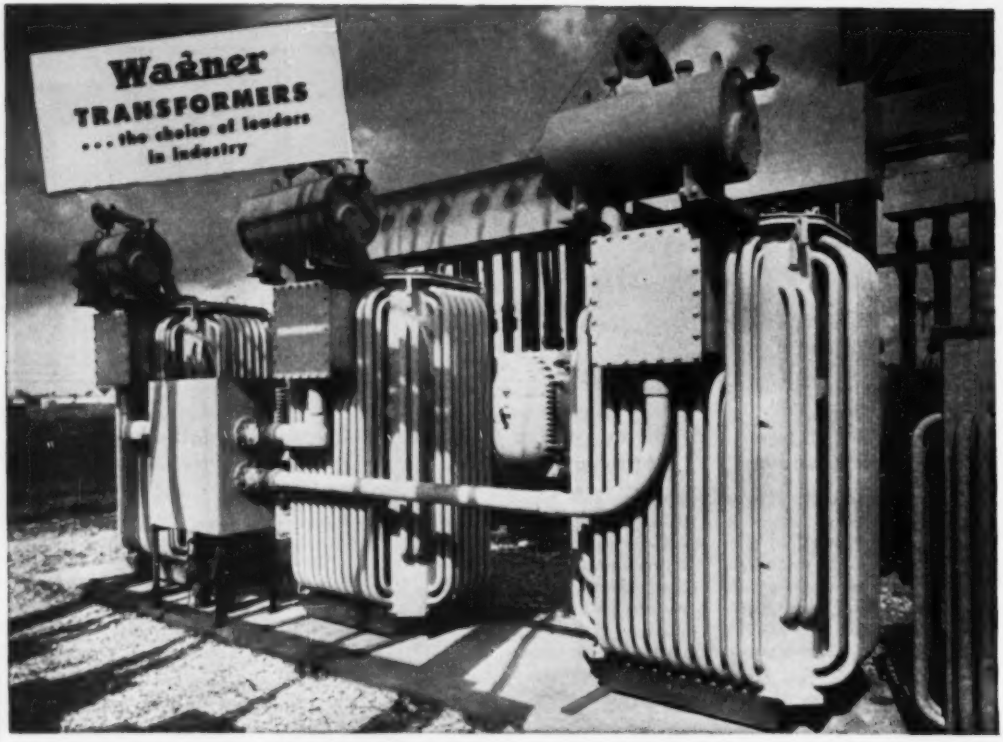
From 69 to 230 kv . . . 1,500,000 to 10,000,000-kva interrupting capacity . . . 5 and 3-cycle interrupting times . . . repetitive reclosing service to meet the industry's fastest requirements.

For more information about these Type BZO oil circuit breakers, ask your nearby A-C representative for Bulletin 71B6022, or write to Allis-Chalmers, Milwaukee 1, Wis.

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

A-3743

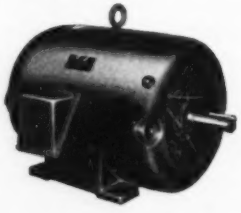


Wagner Transformers power the production of Rohm & Haas "Chemicals for Industry"

Production of "Chemicals for Industry" by the Rohm and Haas Company, makers of famed Plexiglas, is not a simple one-plant operation. The products of one of their plants may have no resemblance to the commercial products into which they are integrated at another plant. The natural raw material found in Texas, for instance—the processed chemicals manufactured there—and Plexiglas, an end product manufactured in another plant—are all part of a great modern production chain.

Power for production—with Rohm and Haas as with any modern industry—is provided by electricity. The manufacture of chemicals in the Rohm and Haas plant in Deer Park, Texas, is powered by Wagner Transformers and Wagner Motors. Wagner transformers in the main substation take energy at 69,000 volts and feed it to the low voltage substation at 2400 volts. The low voltage substation of Wagner transformers (illustrated above) in turn furnishes 480 volts to motors and to small air-cooled Wagner transformers which furnish 120 volts for lights and other single phase loads.

Wagner engineers are qualified to specify the proper transformers and motors for *your* requirements as well. Consult the nearest of our 32 branch offices or write us.



Wagner Electric Corporation
EST 1891

ELECTRIC MOTORS • TRANSFORMERS
INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS — AIR AND HYDRAULIC

WT50-4

DUAL RESCUE technique, using back-pressure arm-lift method of resuscitation, is demonstrated by William Lux, Public Service of Northern Illinois. "Victims" are L. Larson, PS of Northern Illinois, and T. E. Stanhouse, Illinois Power. Onlookers are (l to r) Ted Wickord, PS of Northern Illinois; Cy Hockaday, Texas Electric Service; and W. T. Rogers, Ebasco Services

Dual Resuscitation Method . . .

. . . is demonstrated by William Lux, Public Service of Northern Illinois, before Ebasco Services' annual safety meeting

The possibility of one man saving the lives of two men in need of resuscitation by applying artificial respiration simultaneously to both was demonstrated recently at Ebasco Services' annual safety meeting in Chicago.

William Lux, Public Service Co of Northern Illinois, showed how he saved the lives of two Boy Scouts by applying the back-pressure, arm-lift method on them at the same time.

Describes Program . . . C. E. Bathe, superintendent of transmission and distribution, Oklahoma Gas & Electric Co, pointed out that his company had developed a safety program which resulted in reduction of accident frequency of 39 in 1948 to 6 in 1952. Convincing top executives and supervisory personnel that methods used in getting work done safely and getting it done economically were one and the same, he said, was one of the key factors contributing to the success of the program. Bathe listed another as getting foremen to interest workmen in safety.

Test Results . . . At another safety meeting held recently in Chicago, Dr. A. S. Gordon, University of Illinois Medical School, reported on tests conducted to determine respiratory effects of the different methods of artificial respiration. He spoke before the Public Utilities Section of the National Safety Council.

Results showed, he said, that the back-pressure, arm-lift method is the most effective. The back-pressure, hip-lift methods was a close second. It was felt the back-pressure, arm-lift method is easier to perform.

The Schafer method, the tests showed, was least effective of several methods tried.

At its meeting, Ebasco presented safety awards to three electric utilities —Washington Water Power Co, Mississippi Power & Light Co, and Arkansas Power & Light Co.

Pipe and Tubing . . .

. . . are big problems for mobilizers overseeing the power expansion program

Scarcity of heavy-walled pipe and alloy steel tubing is still among the toughest problems facing defense mobilizers overseeing the electric power expansion program.

At a series of meetings held during the past two weeks, the mobilizers, steel men and manufacturers report they have come up with no solution to the heavy-walled pipe problem. This is the type pipe used in boilers.

Shutdown of the only plant manufacturing this large size pipe is a major cause of the worry. Further, the steel manufacturing industry has made no offer to produce this type pipe.

Alternatives . . . mobilizers are studying three alternatives:

1. Turning and boring—an expensive process of taking forgings and boring out the center. Lengths are limited to less than 30 ft and expensive welding is required.

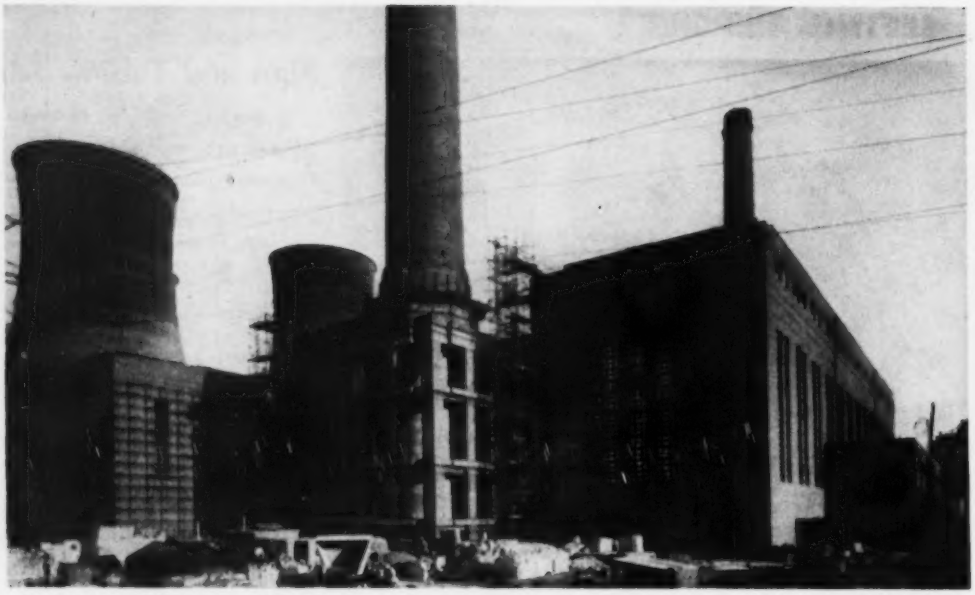
2. Trepanning—a process of cutting the center out of long lengths of solid forgings in the same way that large cannon barrels are machined. In this manner the center piece is preserved, and can be used to machine smaller size pipe.

3. Cup and craw—which is a means of denting plate and drawing the plate through a series of dies to form pipe. This process is unsatisfactory because lengths are limited, and plate is scarce.

A fourth method which consists of rolling and welding heavy plate is already being used by one large boiler firm.

6,300 Tons Needed . . . Approximately 6,300 tons of carbon steel is needed each quarter to meet requirements of the boiler manufacturers.

High-pressure, high temperature alloy tubing is the other scarce item. Boiler manufacturers are in competition with other high-priority programs for tubular goods. Because the electrical requirements are relatively small tubular goods manufacturers have little incentive to delay the larger orders to honor the smaller ones.



NECHELLS B POWER STATION in Birmingham is one of BEA's ten new plants which began producing power during year ended March 1952

BEA's Expansion Program Under Fire

Other groups contest authority's free hand in obtaining scarce materials and capital to carry out its plans

LONDON (McGraw-Hill World News)—The dispute over a still mythical "National Fuel Policy" in Britain got hotter last month with the release by British Electricity Authority of its fourth annual report. At stake may be BEA's somewhat free hand in commanding scarce materials and capital.

BEA reported a net increase in power capacity of 1.06 million kw (7.4%) in the year ended March 1952, its biggest year expansion-wise.

Ambitious Program . . . But it is BEA's plans for the future that have stirred up anew the controversey over fuel policy. BEA outlined a program calling for 10.4 million kw to be installed during 1952-57 with 1.9 million kw tentatively set for both 1958 and '59.

Other principals in what is turning out to be a good old family brawl are the National Gas Council and the National Coal Board. The squabble boils down to this: Should BEA keep its virtually free rein in the material-short British economy? Or should other fuels—particularly other fuels for domestic heating — be encouraged? (About 30% of all fuel in Britain goes for domestic consumption.)

In an attempt to get an impartial answer to these questions the Labor government last year set up a non-political committee under the leadership of Viscount Ridley to hear evidence on all sides. The committee reported out its findings in September but was unable to come up with any important recommendations.

The evidence it received makes this failure understandable.

Charges and Countercharges . . . Gas Council accused BEA of jiggering its prices in order to persuade new housing estates to go all out for electrical installations. In fact, said Gas Council, sometimes installation charges were waived altogether.

BEA replied somebody ought to investigate Gas Council's cost accounting methods; the council has had a habit of laying mains below cost to attract business.

National Coal Board chimed in on the side of Gas Council by claiming it "takes roughly twice as much coal to produce an equivalent heat value by electricity as it does by gas." This point of view BEA characterized as "based on incomplete and, in some cases, misapplied information." BEA counterattacked by accusing the Coal Board of setting prices with little regard to the type of coal and of using BEA "to subsidize other coal consumers, such as the Gas Boards."

Tories Silent . . . The Tory government has not indicated how it feels on fuel policy. But it is believed the Tories are inclined to go along with a Labor government recommendation to scale back power expansion. In one of its last acts Labor told BEA to hold its expansion to not more than 1.55 million kw in any one year. Lord Citrine, BEA's boss, greeted this recom-

mendation with the prediction that electricity supply would never overtake demand.

The row over fuel policy isn't the only fight BEA has had on its hands. The authority raises its capital in the London banks and money markets and the city fathers don't like the depressing effects of BEA's heavy borrowing —especially now that the government has tightened the capital market by hiking the interest rate several percentage points. In the past four years, BEA has raised $1.1 billion in the city. BEA's annual report claims the project capital expenditure over the coming years will amount to $420 million a year until 1957. This means that in due course BEA will have to go to Parliament to get an extension of its borrowing powers, now set at $1.96 billion.

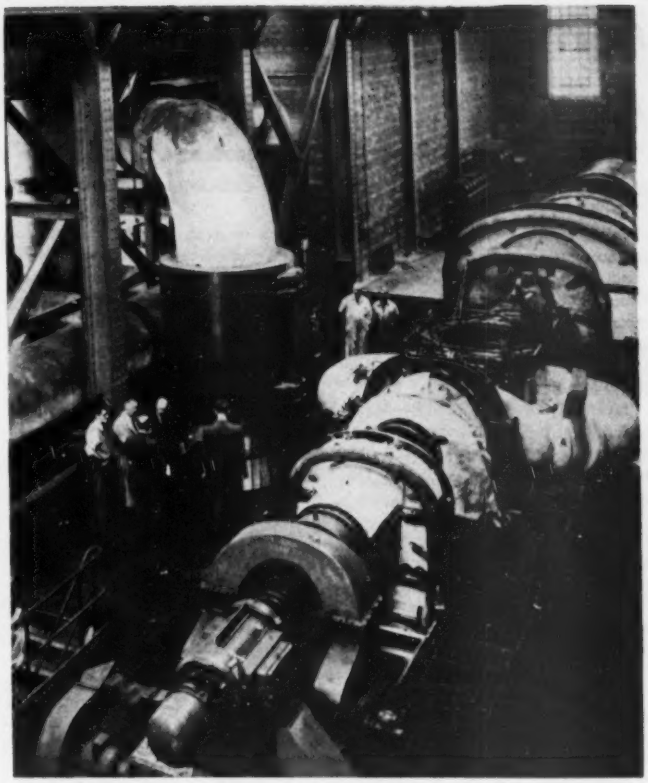
More Criticism . . . Finally, BEA has been attacked by some sections of industry for only grudgingly following the government's directive to relax all restrictions against industries able and willing to provide their own power. "The authority does not consider that the installation of private plant is economic and in the national interest," the annual report says. "If BEA were a private monopoly," comments the Manchester Guardian, "no government would tolerate its attempts to dictate to the community."

Despite his attackers Lord Citrine has ridden on unperturbed. He predicts that power cuts in Britain will be a thing of the past after the winter of 1954-55—and only then.

Increase in Kwhr . . . BEA sent out more power than it ever did before for the year ended March 1952—59.3-billion kwhr an increase of 6.6% over the previous year and 41.7% more than in the year before nationalization. And the 1.06 million kw increase in capacity for the year brought Britain's total installed capacity to just under 15.8 million kw.

BEA did not have such a successful year from a financial standpoint. It showed a surplus of $8.12 million but this was less than half the previous year's figure. Rates were raised 3.3% on the average but this was offset by an 8.2% boost in the average works cost per unit of electricity.

Tie With France? . . . In another field BEA has taken preliminary steps toward consideration of a new project which may result in considerable economic advantages. The project is a submarine power cable under the English Channel to interconnect the power systems of Britain and France. BEA plans to spend $350,000 on development work on the intertie during the next two years.



HEAT-EXCHANGING UNIT is dismantled after completing a trial run at the experimental gas turbine plant of BEA's Manchester power station. Capacity of the new plant is 10,000 kw

The first consequence of a link between Britain and France would be to secure the normal benefits of a grid system—a reduction in total capacity required, a reduction in standby plants required, and a reduction in unit cost of production through a more efficient use of installed capacity. But, in fact, the economy would be substantially greater.

BEA (which excludes the North of Scotland Hydro-Electric Board) has a thermal capacity of 14,214,000 kw and a hydro capacity of only 169,000 kw. In summer, demands can easily be met but in winter the authority is forced to shed load. France on the other hand, has a thermal capacity of 5,843,000 kw and a hydro capacity of 6,784,000 kw. She is hard-pressed in the summer when the water reservoirs are low.

Mutual Advantages . . . In the summer, therefore, electricity would normally be exported from Britain to France, improving Britain's thermal load factor and conserving the French reservoirs; in the winter the process would be reversed so that full use could be made of French water supplies.

Also within the seasonal cycle there would be a daily pattern of exchanges of power since the daily peak consumption periods do not coincide in the two countries.

This project, if it is undertaken, of course, will be of no immediate help to BEA, but importation of hydro power from France might very well be the answer to Britain's fuel squabble.

Aluminum Meter Connections

Use of metal discussed by PEA committee. Other association groups consider load control, and customer relations

A variety of topics were discussed at recent meetings of three Pennsylvania Electric Association committees. Chief among them were aluminum meter connections, weather forecasts as an aid to load forecasting, and customer relations as a factor in the delivery of power.

Meetings of the groups—Meter Committee, System Operation Committee, and Transmission and Distribution Committee—were all held last month.

On Meters . . . Increasing use of aluminum in service entrance cable or steel conduit requires a uniform set-up for connections and meters, L. J. McMakin, Metropolitan Edison Co, told those attending the Electric Meter Committee meeting.

The set-up could be obtained with the help of manufacturers of meter equipment and service entrance equipment, McMakin continued. Co-author of the report was N. W. Yeakel, Philadelphia Electric Co.

Some items that need consideration for aluminum meter connections, the report said, are: (1) Minimum connector area to be established; (2) connectors to be plated and made suitable for both copper and aluminum; (3) connector pressure to be applied continually, considering cold flow of aluminum; (4) larger conduits, wireways and cable diameter to be used for the same current capacities as for copper; and (5) ground connections to be made through suitable connectors to ground electrode, and to be above ground; (6) aluminum not to be used for driven or buried ground electrode.

System Operations . . . When better weather forecasts are available, they can be used to forecast system loads, G. R. Williams, Consolidated Gas, Electric Light & Power Co, told the System Operation Committee at Pittsburgh.

The Baltimore utility has found a consistent relationship between the natural light intensity and the non-industrial electrical load, he reported. When this light index is modified by temperature factors, he continued, the correlation is close enough to be an important tool in forecasting load.

The initial installations of an incremental automatic load control system were described by G. C. Spray, West Penn Power Co. When completed all major generating units will be controlled, including Lake Lynn hydro station, on the most economical loading schedule. The control will be fast enough, he said, to compensate easily for load swings, and yet capable of prompt adjustment by load dispatcher to match changes in operating requirements.

T&D Talk . . . Customer relations is a factor in delivering power, stated M. M. DeVorris, Industrial Department Manager, Eastern Division, Pennsylvania Electric Co, at the Transmission and Distribution Committee meeting. Two points to be considered, he declared, are physical design at the equipment location and the manner and thoughtfulness in doing the job, whether construction or maintenance.

Committee members and guests witnessed a preformed-device strength demonstration conducted by Kenneth Miller, preformed Line Products Co. In one test a preformed splice and two preformed dead-ends withstood a 7,000 lb pull on a 336,400 cir mil all-aluminum stranded conductor, (6,900 lb breaking strength) when the cable broke outside the preformed devices. In another test a preformed splice would have withstood a pull higher than 14,000 lb on a ¾-in. high-strength (10,800 lb) guy strand, but the test was discontinued when the anchored stub poles loosened.

A 1.6-in. expanded aluminum stranded conductor designed for use on a 330-kv line, stated G. S. Phillips, Aluminum Co of America, has current carrying capacity for the following test conditions: New cable at 27 C and for 66 deg rise carries 1150 amp in still air and 1380 amp with a 2 lb crosswind; when conductor was painted black the values were 1490 and 1785 amp for the respective conditions. Outside diameter when measured under load conditions, he continued, had an increase comparable to ACSR type.

Lights on at the United Nations

The United Nations turned on the lights to remind New York City of the seventh anniversary of its founding Oct. 24. The world organization spelled out a giant UN on the Secretariat building increasing the brightness of the city's night lights. Buildings in foreground are part of Manhattan's East Side; Long Island City lies beyond the East River.

Facts from MONTANA

"'CSP' Transformers cut failures 50 to 1"

"We have been using 'CSP' Transformers for the past ten years," says a Montana Utility. "One of our divisions now has about 1,000 'CSP' Transformers in service, and an equal number of the conventional type.

"Of all our 'CSP' Transformers, we have lost but one from lightning. During this 10-year period, we have been losing an average of five conventional transformers per year. That means a ratio of approximately 50 to 1 in favor of the 'CSP'."

Old standards for judging transformers were discarded when the "CSP" (Completely Self-Protecting) Transformer was introduced. The "CSP" Transformer, with both lightning and thermal protection built in, has slashed costs, cut maintenance, and improved service continuity. Its reputation has been won by performance in the field, in instances like this one—records that have made it first choice with utilities coast to coast.

Installation and maintenance costs for Westinghouse "CSP" Transformers are always lower, because complete protective equipment is built in, not separately mounted. A two-year survey of Electric Light and Power Companies developed the National Averages shown at left.

NATIONAL AVERAGES

	"CSP"	Conventional
Installation Costs	$13.87	$24.74
Burn-out Rate	0.257%	1.005%
Fuse Outages	None	5.64% @ $6.52 per outage
Load Checks	Automatic	12.8%
Breaker Reset	1.02%	None

If you'd like to check your own costs against these national averages, ask your Westinghouse representative for Booklet B-4247-B, "Transformer Costs and Their Relation to Profits". Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

"CSP" devices . . . originated and patented by Westinghouse

YOU CAN BE SURE... IF IT'S Westinghouse

"CSP" DISTRIBUTION TRANSFORMERS

J-70591-A

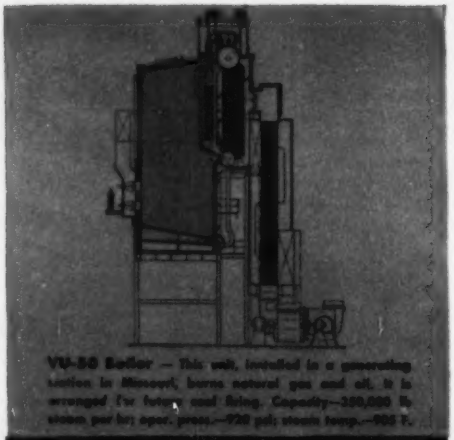
VU—popular with UTILITIES ...from coast to coast

The name Combustion has so long been associated with large power boilers that some utility people are surprised to learn the extent of C-E utility installations in the small-to-medium capacity range.

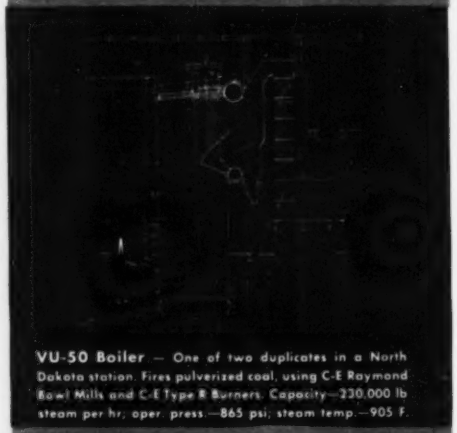
The fact is that well-known utility companies all over the country have bought C-E Vertical-Unit Boilers for capacities from less than 50,000 to over 400,000 lb of steam per hr. Moreover, they have re-ordered them again and again; in fact, 54% of all utilities now using VU Boilers have two or more of them in service (see partial list below).

Thus, it is evident that when your steam requirements fall into the more moderate ranges, you can rely as fully on Combustion as you would for very large steam generating units. And you will find in VU designs the same advanced engineering that has been responsible for the high performance standards characteristic of large C-E utility installations.

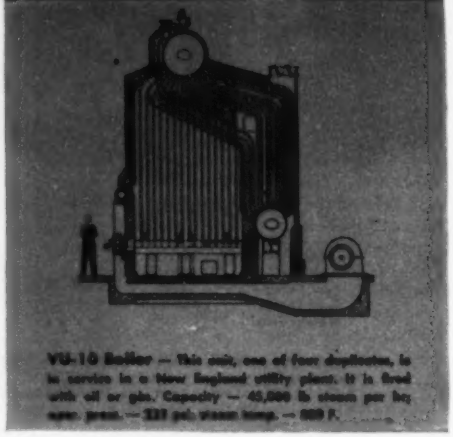
So, for any steam requirements in the 10,000-400,000 lb per hr range, look to the Combustion line of Vertical-Unit Boilers for maximum return on your boiler investment.



VU-80 Boiler — This unit, installed in a generating station in Missouri, burns natural gas and oil. It is arranged for future coal firing. Capacity—330,000 lb steam per hr; oper. press.—920 psi; steam temp.—905 F.



VU-50 Boiler — One of two duplicates in a North Dakota station. Fires pulverized coal, using C-E Raymond Bowl Mills and C-E Type R Burners. Capacity—230,000 lb steam per hr; oper. press.—865 psi; steam temp.—905 F.



VU-10 Boiler — This unit, one of four duplicates, is in service in a New England utility plant. It is fired with oil or gas. Capacity — 45,000 lb steam per hr; oper. press.—325 psi; steam temp.—800 F.

Partial List of Utility Companies Using Two or More VU Units

Atlantic City Electric Co.
California Electric Power Co. • Central Hudson Gas & Electric Co.
Central Illinois Public Service Co.
Dallas Power & Light Co.
Dayton Power & Light Co.
Florida Power & Light Co. • Interstate Power Co.
Kansas Gas & Electric Co.
Missouri Power & Light Co.
Narragansett Electric Co., The • Northwestern Public Service Co.
New York State Electric & Gas Corp.
Omaha Public Power District
Otter Tail Power Co., The
Savannah Electric & Power Co. • Southwestern Public Service Co.
Texas Electric Service Co.
Western Light & Telephone Co.
Western Massachusetts Electric Co.

COMBUSTION ENGINEERING—SUPERHEATER, INC.

Combustion Engineering Building • 200 Madison Avenue, New York 16, N. Y.

B-630A

ALL TYPES OF BOILERS, FURNACES, PULVERIZED FUEL SYSTEMS AND STOKERS; ALSO SUPERHEATERS, ECONOMIZERS AND AIR HEATERS

MEETINGS

ASME Plans Annual Parley

Slated to meet Nov. 30-Dec. 5 in New York, the group will hold discussions on heat transfer and air pollution

The American Society of Mechanical Engineers will be active this December when it holds its annual meeting and guides the 20th National Power Show (see story below).

Scheduled to be held Nov. 30-Dec. 5 at Hotels Statler and McAlpin in New York, ASME's annual meeting has as its theme "Building for the Future of America."

Power's role in this "building" program is revealed by the agenda's sessions on heat transfer, gas turbine fuels, air pollution controls, high pressure boilers, boiler feed water, and pellet slag removal.

Heat Transfer . . . A report on a liquid-metal heat-transfer and steam-generation system for nuclear power plants will be presented by T. Trocki and D. B. Nelson, Knolls Atomic Power Laboratory.

Use of residual fuel oils in gas turbines will be analyzed by Philip Draper, Shell Petroleum Co, Ltd. Some considerations in the installation of the gas turbine in a closed compartment will be discussed by L. W. Shallenberg, J. O. White Mechanical Laboratory, and K. E. Schlachter, U. S. Naval Engineering Experiment Station.

Air Pollution . . . Recent developments and progress in air-pollution abatement will be reviewed by A. D. Brandt, Bethlehem Steel Co. Stack diffusion is the topic E. W. Hewson, Massachusetts Institute of Technology, will discuss.

J. C. Falkner, Consolidated Edison Co of New York, Inc, will handle a discussion on quick starting of large high-pressure, high temperature boilers. A talk on controlled starting of steam turbines will be given by R. L. Reynolds, Westinghouse Electric Corp. Discussions on quick starting of steam turbines will be held by Carl Schabtach, General Electric Co, and C. D. Wilson, Allis-Chalmers Manufacturing Co.

Boiler Studies . . . Participants in the boiler-feedwater studies will be J. D. Ristroph, Virginia Electric & Power Co, and E. B. Powell, Stone & Webster Engineering Corp. They will discuss contamination of condensate by heat-exchanger tube alloys. Experimental studies of boiler-tube metal temperatures will be explained by C. Jacklin, of the National Aluminate Corp.

Conversion of a two-stage hot-process water softener from hot lime-soda-phosphate to hot lime-zeolite will be discussed by G. H. Gowdy, Negea Service Corp of New England Gas & Electric System, and S. B. Applebaum, Cochrane Corp.

Pellet Slag Removal . . . W. F. Cantieri, Diamond Power Specialty Corp, will talk about the recent development in the use of pellets for the removal of slag deposits in boiler furnaces. Use of additives to reduce oil-slag deposits will be explained by E. C. Huge, Babcock & Wilcox Co, and Robert B. Lee, Florida Power & Light Co.

For this annual meeting ASME has also scheduled a women's program. Among the activities planned are a fashion show at Hotel Pierre, presentation of a color film of Hawaii at the Hotel Statler, and a tour of S. S. America.

CALENDAR

National Association of Railroad and Utilities Commissioners
Annual Meeting, Hotel Marion, Little Rock, Ark., Nov. 10-14.

National Electrical Manufacturers Association
Annual Meeting, Haddon Hall Hotel, Atlantic City, N. J., Nov. 10-13.

Texas A. & M. College
Public Utility Short Course for Electrical Metermen, Electrical Engineering Department, College Station, Tex., Nov. 10-14.

Pennsylvania Electric Association
Fall Meeting, Relay Committee, Robert Treat Hotel, Newark, N. J., Nov. 13-14.

American Institute of Electrical Engineers
Special Technical Conference on Electrically Operated Recording and Controlling Instruments, Benjamin Franklin Hotel, Philadelphia, Nov. 17-18; Winter General Meeting Hotel Statler, New York, Jan. 19-23, 1953.

National Association of Corrosion Engineers
Western Region, 2nd Annual Conference, Biltmore Hotel, Los Angeles, Nov. 20-21.

American Standards Association
34th Annual Meeting, Waldorf-Astoria Hotel, New York, Nov. 25.

American Society of Mechanical Engineers
Annual Meeting, Statler Hotel, New York, Nov. 30-Dec. 5.

20th National Power Show
Sponsored by American Society of Mechanical Engineers, Grand Central Palace, New York, Dec. 1-6.

Public Utilities Advertising Association
Winter Meeting, Region 2, Claridge Hotel, Atlantic City, N. J., Dec. 4-5.

Institute of Radio Engineers
Joint Electronic Computers Conference with American Institute of Electrical Engineers, Park Sheraton Hotel, New York, Dec. 10-12; Joint High Frequency Measurements Conference with AIEE, Statler Hotel, Washington, D. C., Jan. 14-16, 1953.

Canadian Electrical Association
Eastern Zone; Engineering Division, Nova Scotian Hotel, Halifax, N. S., Jan. 15-16, 1953; Sales Division, General Brock Hotel, Niagara Falls, Ont., Jan. 22-23, 1953; General Division, Mont Tremblant Lodge, Mont Tremblant, Que., Jan. 29-30.

National Power Show Is Scheduled

The Twentieth National Exposition of Power and Mechanical Engineering will be held at Grand Central Palace, New York, Dec. 1-6. This "Power Show," which is being held under the auspices of the American Society of Mechanical Engineers, will coincide with the society's annual meeting.

All types of equipment used in the power field will be displayed by more than 300 exhibitors on three floors of the Palace. Major exhibits will include power plant and power transmission equipment, electrical heating, ventilating and air-conditioning equipment, safety, and plant maintenance as well as research and testing equipment.

Among the exhibits will be the automatic packaged boiler, electronic transmitters, a revolutionary line of motor controls, life-seal bonnet valves for 1,500 and 2,500 lb service, a wide variety of packless expansion joints which require no maintenance, and a recently designed supporting rotary pressure joint which is completely packless, self-lubricating, self-adjusting, and self-aligning.

Visitors are admitted by invitation and registration, but without registration fee. The Power Show is under the management of Charles F. Roth of the International Exposition Co, located in Grand Central Palace.

FPC STAFFERS: They counsel on engineering problems . . .

C. E. BENNETT, chief of Electric Resources and Requirements Division, meets often with utility officials to promote system interconnections on voluntary basis

HYDRO SITE? Frank L. Weaver, Division of River Basins, will have a suggestion for its location next year when he completes his survey of water power sites

APPLICANTS for federal hydro licenses usually confer with William R. Farley (right), chief of Division of Licensed Projects, to learn FPC project requirements

POWER BUREAU CHIEF Francis L. Adams and his assistant, Marion F. Hetherington, coordinate work of regional offices that help utilities solve engineering and procedural problems. Many power companies rely heavily on this bureau

Federal Power Commission:
Today the Accent

Established by Congress as a regulatory agency, the Federal Power Commission today has become in addition a vast repository of facts, figures and engineering experience of great value to electric utilities.

A large share of this accumulated information is available to utilities and the public through a host of publications issued by the commission. More specific information is available through conferences with staff members.

Five FPC regional offices serve as contact points between electric utilities and the commission. These offices carry on field work on power market surveys, possible system

...They assemble data on all utilities...

ELECTRICAL RESOURCES and Requirements Division publishes FPC regional maps showing generating and transmitting facilities of power companies. Myron M. Moore collects data to keep maps up to date

RUNNING ACCOUNT of steam plant construction costs and annual production expenses is widely used by utility engineers. Harold E. Roberts of Electric Resources, recently completed fourth supplement

MONTHLY REPORTS on power supply and estimated peak loads for a four-year period are put together by Electric Resources' James Stout. Information is available to government agencies and official groups

POWER MARKET SURVEYS of the Division are conducted on a regional basis for a 25-year period. Field work by regional offices is coordinated by Norman C. Nelson. Division has published 19 surveys

Is on Constructive Regulation

interconnections, and the gathering of much basic data used by the commission.

FPC's Bureau of Power, headed by Francis L. Adams, directs the work of the field offices and coordinates this work with other staff divisions of the bureau in Washington. Besides their strictly regulatory functions, divisions under the Bureau of Power perform certain duties sometimes referred to as "positive regulation."

For instance, under terms of the Federal Power Act the commission is authorized to promote system interconnections that are found to be in the public interest. C. E. Bennett, chief of the Electric Resources and Requirements Division has recently been supervising a study on possible interties between major electric systems in Florida.

Out of this has come a formal FPC proposal now being studied by the utilities which would be affected. But Bennett emphasizes that the utilities retain the right either to accept or reject the proposal. FPC has no authority to enforce it's recommendation except in an emergency.

Other studies of direct use by utilities also are carried on by other divisions of the Power Bureau.

Much more widely known are the regular statistical

...They collect electric company statistics

STATISTICS AND FINANCIAL DIVISION is a storehouse for utility facts and figures. Lawrence D. Jennings, head of the division's Statistical Section, helps other agencies keep power figures accurate

KEY PARTS of the well-known S-17 series are put together by Paul Hayes, head of the Power Reports Section. Utility data are used in compiling reports on energy production, fuel consumption, etc.

BOB SISK of F&S Division supervises publication of "Comprehensive Statistics of Electric Utilities in the U.S." An annual publication, it contains most pertinent facts about all Class I utilities in the country

A BEST SELLER among FPC publications is the annual "Typical Electric Bills" study done by Harold Craig, head of the Rate Reports Section. Craig also supervises compilation of the commission's rate book

Staff Men Backstop the Commissioners

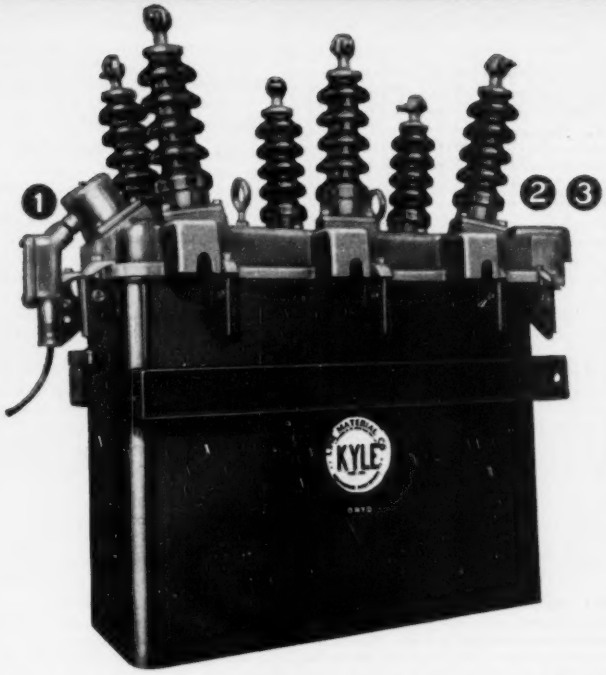
studies published by FPC. Much of this work is done by the Division of Finance and Statistics under Emmett G. Craig.

The agency regularly publishes 16 different studies dealing with generation, transmission and sale of electric power. It keeps tab on industrial power plants in addition. Principle purpose of these publications is to provide the public with essential information of the electric industry. They serve only as a convenience to the commission in carrying out its regulatory work.

During fiscal 1951, FPC spent about $210,000 compiling and publishing statistical studies and maps. This work required the full-time activity of more than 40 commission employees. A large share of these publications were purchased by utilities, but financial institutions, engineers and consultants were also steady customers.

From data largely furnished by individual utilities, FPC's Finance and Statistical Division combines figures to give national and regional pictures of the industry. Among the better known publications are: "Statistics of Electric Utilities in the U. S.," "Typical Residential Electric Bills," and "Electric Utility Depreciation Practices."

Constructive regulation is an important concept to the professionals who man the commission staff. Their job, along with helping the commissioners decide policy matters, is to help the utilities help themselves.



L-M's Kyle Type 3H Recloser Provides Automatic 3-Phase Protection

With three units in one tank, linkage tolerances can be controlled more closely, insuring more accurate and dependable 3-phase operation of the recloser.

The Kyle Type 3H 3-phase recloser provides individual reclosing and resetting on each phase for temporary faults. In case of permanent fault on any one phase, the recloser locks out *all three phases simultaneously*.

The Kyle 3H Recloser can be coordinated with sectionalizers or branch line fuses to isolate permanent faults to small sections of the system. Because all three units are in one tank, there is no external linkage; and greater operating accuracy and dependability are assured.

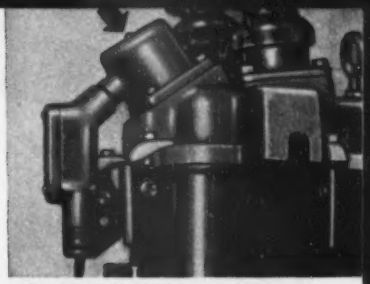
Positive toggle action; fast opening and closing do not depend on gravity. The Kyle hydraulic mechanism has proved itself over years of service to be dependable and trouble free.

The Kyle 3H can be applied on systems up to 15 kv, with nominal load ratings from 5 to 50 amperes and minimum trip currents from 10 to 100 amperes. Coils are easily changed right in the field. Interrupting ratings from 150 to 1200 amperes. Trip-free operating handle and all other Kyle safety features. Plated Universal bushing terminals for copper or aluminum. Available with the accessories shown at the right.

Get the Whole Story of Automatic Protection

Ask the L-M Field Engineer for a copy of Bulletin CR-1, or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

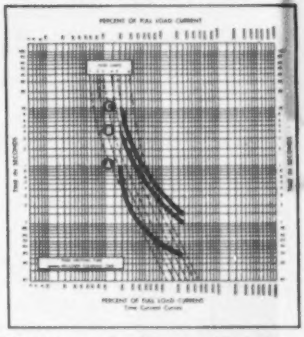
Like all Kyle reclosers, the Type 3H is filled with ORTO®, L-M's oxidation-resistant transformer oil.



1 SHUNT TRIP COIL: an optional accessory that permits tripping the recloser from a distant point so it will not reclose. Or for ground fault-tripping with relay or other control equipment, the coil locks out the recloser in one fast operation. Must be built in at the factory.

2 KYLE NON-RECLOSING FEATURE: when control lever is down, this accessory prevents automatic reclosing, providing fast lockout on the first operation, for greater safety for men and equipment during hot line work. Available on all Kyle reclosers.

3 AUXILIARY SWITCH: an SPDT switch that may be attached to a Kyle 3H recloser. It may be used either to operate a remote indicator light to show when the recloser is open and closed; or as a limit switch to cut off current from the shunt trip coil after it has operated.



Kyle Reclosers offer the widest choice of time-current curves and sequences. You can select from Curve A, fast; B, retarded; C, extra-retarded. Choice of seven sequence combinations; sequences quickly changed right in the field.

LINE MATERIAL
Kyle® Reclosers

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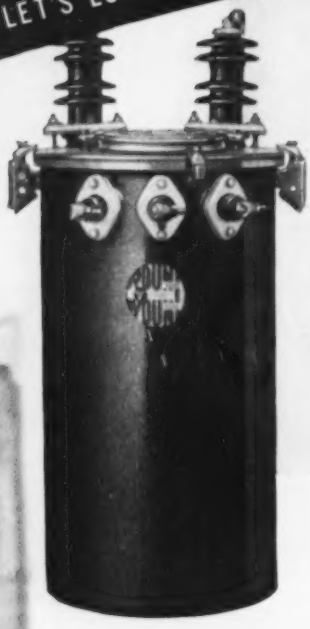
LET'S LOOK AT THE FACTS



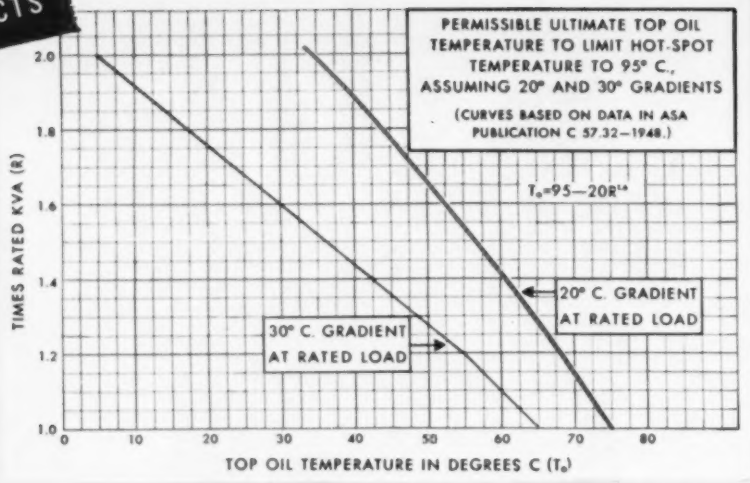


FIGURE 1—The colored line represents the conservative performance typical of a core-type transformer with highly efficient cooling such as the L-M Round-Wound, while the black curve represents the loading permissible with a transformer with less efficient cooling. These are ultimate oil temperatures. Because of efficient dissipation of heat from the coils to the oil, the oil reaches its ultimate temperature more rapidly in L-M Round-Wounds than in some other styles of construction.

How L-M Round-Wound Design Permits Heavier Loading or Longer Transformer Life

Round coils wound directly onto a wound core provide exceptional cooling that keeps copper and hot-spot temperatures relatively low even under high short-time overloads.

by **ROBERT P. THOMPSON,**
Assistant Chief Engineer,
Transformer Division,
Line Material Company

Greater transformer utilization through heavier loading offers substantial savings on almost any power system. Therefore the subject of transformer loading is receiving exceptional attention, both from utility companies and from the manufacturers.

Overload capacity of any individual transformer depends upon such factors as ambient temperatures, previous condition of loading, duration of the overload, and the sacrifice in transformer life that the user is willing to make.

But the principal factor is the transformer itself. Since overload capacity is limited by hot-spot temperature rise during the overload period, this capacity is largely determined by the design of the coils and the efficiency with which heat can be dissipated to the oil.

Obviously a core-type transformer, which has greater coil surface exposure, offers better overload capacity than shell types, in which coil surfaces are blanketed by core steel.

Round coils offer greater overload capacity than rectangular coil types, because coils present more unobstructed surface to cooling oil.

The Round-Wound transformer combines the advantages of the core-type transformer with the rapid heat dissipation of unobstructed round coil surfaces—and offers, in addition, the advantages of the cruciform-cross-section core, which provides natural oil passages for cooling the inside of the coils. Thus in the Round-Wound transformer, heat is dissipated *more rapidly* and more uniformly. For this reason the Round-Wound design provides higher short-time overload capacity, or a longer life with the same overload (Figure 3).

Get Details on L-M Round-Wound Transformers

Ask the L-M Field Engineer, or write Mr. Thompson at the Transformer Division, Line Material Company, Zanesville, Ohio (a McGraw Electric Company Division).

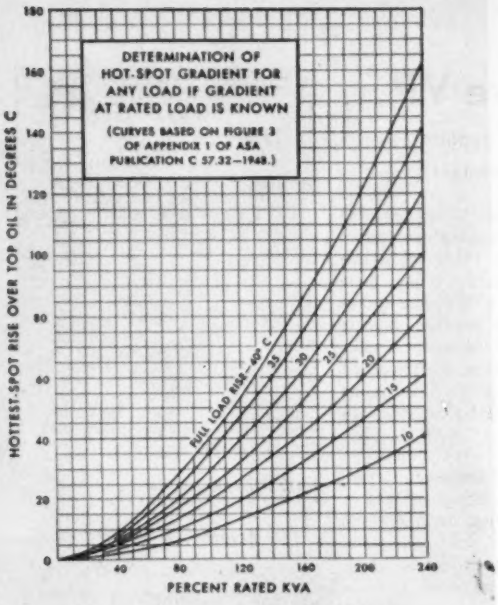

DETERMINATION OF HOT-SPOT GRADIENT FOR ANY LOAD IF GRADIENT AT RATED LOAD IS KNOWN
(CURVES BASED ON FIGURE 3 OF APPENDIX 1 OF ASA PUBLICATION C 57.32—1948.)
HOTTEST-SPOT RISE OVER TOP OIL IN DEGREES C
PERCENT RATED KVA
FULL LOAD RISE—40° C
35
30
25
20
15
10

FIGURE 2—Here is presented a method of determining the hot-spot gradient for any load, if the gradient at rated load is known. It is to be noted that the higher the gradient at rated load, the more rapid is the rate of increase in the gradient with overload. The L-M Round-Wound transformer with a lower hot-spot gradient at rated load has a greater capacity for overload before damaging temperatures are reached.

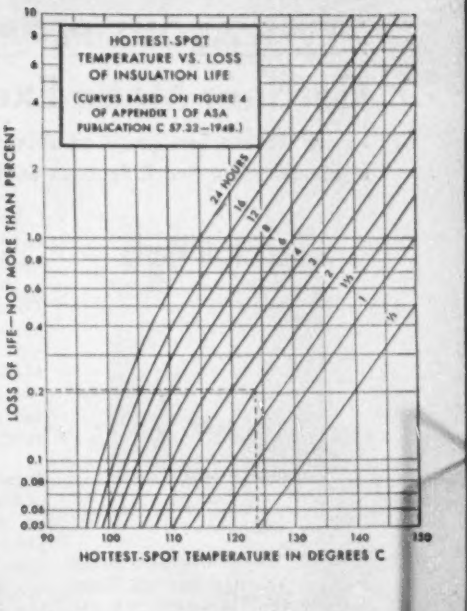


FIGURE 3—The primary factors in the deterioration of cellulosic insulation are time and temperature. Here is a method for approximating the loss of insulation life due to these two factors. Obviously an L-M Round-Wound transformer with its appreciably lower hot-spot temperatures during overloads will reduce the possible insulation damage and increase the overall life.

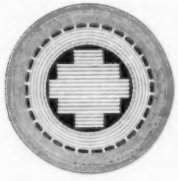


FIGURE 5—Cruciform cross section of the wound core provides oil passages between core and coils. In addition spacers between windings and between layers in larger sizes provide additional oil circulation, giving exceptionally good cooling for the entire unit.

Some of the Outstanding Characteristics of L-M Round-Wound Transformers

High Short-Time Overload Capacity

Better Regulation at all power factors

High Impulse Level, with ample creepage distances and generous insulation

High Short-Circuit Strength, because round coils have less tendency to distort

Low Exciting Current, because the core is not cut or disturbed after annealing

Better Loss Ratios with lower total losses

Filled with ORTO®, L-M's oxidation-resistant transformer oil, inhibited for longer life.

"Round-Wound" is a Line Material Co. trademark.

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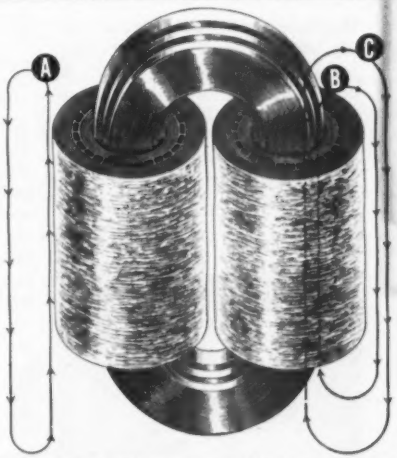


FIGURE 4—Diagrammatic presentation of the Round-Wound core-coil assembly. The core is wound of continuous strip of oriented silicon steel of various widths to give a core of cruciform cross section. Core is not unwound or cut, because coils are wound directly onto the completed, annealed core. Coils surround a maximum of the core circuit. They present a relatively large area to cooling oil.

LINE MATERIAL Transformers

Complete Coordinated Equipment for Distribution Today

NEWS ABOUT PEOPLE

Gardner Made Executive VP...

. . . of Ebasco Services. Consulting firm also appoints Reece a vice president and Colquhoun engineering manager

(Cover Story)

F. C. Gardner has been elected executive vice president of Ebasco Services, Inc. In addition, K. W. Reece has been elected vice president in charge of engineering and construction and W. H. Colquhoun has been named engineering manager of the New York firm. T. C. Wescott, Ebasco president, announced the appointments.

Was Department Head . . . After working with numerous utilities, Gardner joined Ebasco in 1939 as head of the design and construction department. He has been vice president in charge of engineering and construction since 1945. Gardner, who received a BS degree in civil engineering from North Carolina State College, is a member of the American Society of Civil Engineers.

K. W. REECE

Reece started with Ebasco in 1925 and has been engineering manager of the company since 1945. He is also a graduate of North Carolina State College and holds a BS degree in civil engineering. Reece, who did graduate work at Columbia University in electrical engineering, is a member of the American Society of Civil Engineers and of the Technical Evaluation Society of New York.

Began as Appraisal Engineer . . . Colquhoun began with Ebasco in 1941 as an appraisal engineer. He was made assistant to the engineering manager in 1950 and assistant engineering manager in April of this year. He is a graduate electrical engineer from Rensselaer Polytechnic Institute.

Empire District Electric Assigns 9 to New Units

Empire District Electric Co, Joplin, Mo., has streamlined its operating organization by forming five departments and realigning various responsibilities.

The five newly established departments of the Operating Division are: Production, engineering, system operations, transmission, distribution, maintenance and construction, and transportation.

O. A. Pandleton has been named superintendent of engineering; C. M. Haynes, assistant superintendent of engineering; H. E. Hoadley, planning engineer; E. L. Weber, distribution engineer; and L. B. Patton, transmission engineer.

R. C. Allen has been made system operator and will be responsible for system dispatchers, substation operators, relaying, communications, metering, and also the utility's shop department.

George W. Iney has been appointed head of the production department and E. E. Spracklen will head the transmission, distribution, and maintenance and construction departments. Joy L. Wilson has been made head of the transportation department.

ROBERT BRANDT

NEES Assigns . . .

. . . Brandt to handle power supply, planning, and dispatching for 2 subsidiaries

Robert Brandt, assistant vice president of the New England Power and Connecticut River Power companies, Boston, has been placed in charge of power supply, planning, and dispatching for these wholesale companies of the New England Electric System.

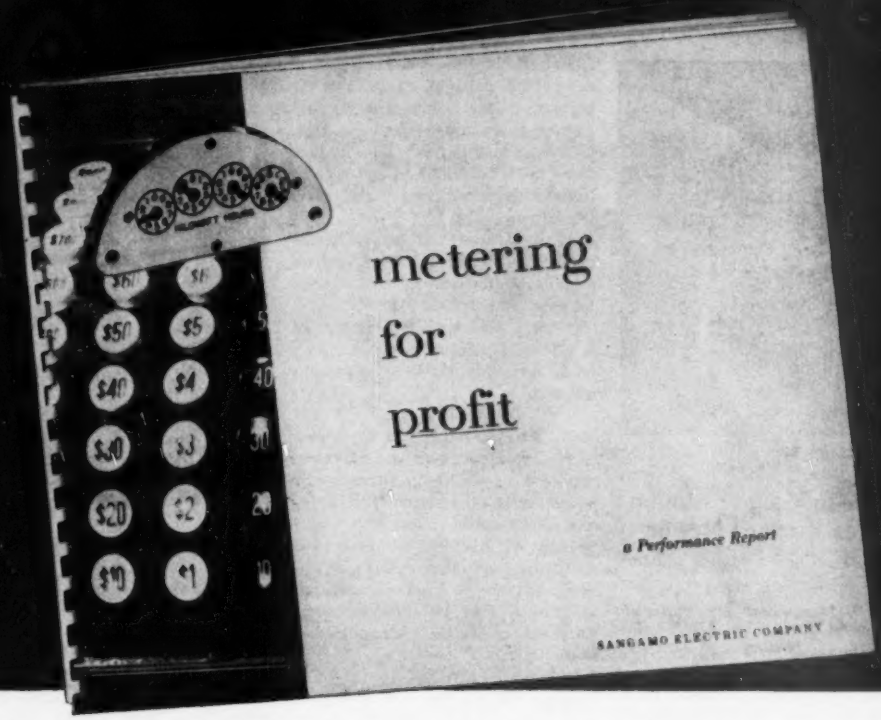
This department was headed by William R. Bell, who recently was made principal officer of the subsidiaries (EW, Oct. 6, p 172).

Brandt joined the New England power system in 1926 as an engineering assistant at Worcester, advancing to the post of engineer in 1942. He returned to Boston last spring after serving as director of Defense Electric Power Administration's Power Supply Division.

Prior to serving as director, Brandt was chief of Depa's Coordination and Planning Branch.

Heads Power Group

Ned W. Beaudreau, Central Power & Light Co., has been elected president of Petroleum Electric Power Association. Beaudreau, who has served as vice president, succeeds Thomas E. Graham, Oklahoma Gas & Electric Co. James E. Moody, Southwestern Gas & Electric Co, who has been secretary-treasurer, was elevated to the vice presidency. W. L. Pearson, Southwestern Public Service Co, was named secretary-treasurer.



What would YOU like to know about metering?

Would you like to know what makes OUTDOOR METERING possible?

Sangamo J Meters are fully and precisely compensated for all temperature extremes . . . They are designed to maintain the proper physical relationships of all parts under all conditions of temperature and vibration . . . They are constructed of corrosion-resistant materials and are furnished with specially heat-treated glass covers.

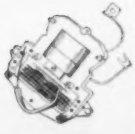
Would you like to know how HIGH BILL COMPLAINTS can be reduced?

Damping magnets control the speed of the meter. Accuracy depends on the permanence of their strength. Millions of J Meters equipped with Alnico magnets have been in operation for years without a report of a single one of them speeding up in service due to loss of damping strength.

Would you like to know what QUALITY CONTROL means to you?

Sangamo's statistical quality control insures accurate and uniform performance. Control techniques —like examining production samples . . . testing those samples . . . and checking critical dimensions assure uniform accuracy. Service records from the field are also studied and evaluated—you can read the full story in "Metering for Profit."

Would you like to know why meters can operate for years with SUSTAINED ACCURACY?



Sustained high accuracy is no accident. Liberally designed potential and current elements combine to insure accurate registration from the lightest loads to loads well over four times the nominal current rating. Other important electrical and mechanical features embody the desired characteristics in all Sangamo J Meters.

Meters are important to everybody in the Electric Utility Industry—not only because they are the operating components through which every cent of revenue is measured—but, because modern meters can help the industry obtain the maximum benefits in "Metering for Profit."

Would you like to know how modern meters can promote good public relations?

Would you like to know how accurate meters facilitate fair pricing? How dependable meters can reduce operating costs? And, how well-designed meters save operating and maintenance expense for your company?

If you are interested in the answers to these, and many other questions, get your copy of "Metering for Profit." It's yours for the asking.

SANGAMO ELECTRIC COMPANY, Springfield, Illinois

Please send my free copy of "Metering for Profit"

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Company_____

City and Zone_____ **State**_____

SM52-12

RICHARD S. NEWLIN

Anaconda Copper Mining Elevates Richard Newlin

Anaconda Copper Mining Co has made the following changes in the executive personnel of the company and its subsidiaries, Chile Copper Co, Chile Exploration Co and Andes Copper Mining Co:

Richard S. Newlin, assistant vice president in charge of mining operations since 1946, has been elected vice president in charge of mining operations. He succeeds Clyde E. Weed who recently was elected vice president in charge of operations of the company and its subsidiaries.

Thomas A. Campbell, vice president and managing director of the Chilean subsidiaries, has been appointed to the post of executive vice president of the Chilean subsidiaries. Campbell replaces Burr Wheeler, who is retiring after 38 years of service.

Rodolfo Michels, vice president of Andes Copper and Chile Exploration, has been elected vice president and resident director of those companies with headquarters at Santiago, Chile.

Henry E. Gardiner has been named assistant vice president of Andes Copper and Chile Exploration.

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Arthur P. Kelly, director of public relations and advertising for Rochester Gas & Electric Corp, has retired. Kelly, a former newspaperman, has served the company nearly 18 years in various posts connected with public relations, advertising, and general publicity.

William H. Nalder, chief designing engineer of the Bureau of Reclamation since 1945, has retired. Nalder's assistant, **O. L. Rice,** has been named acting chief designing engineer of the bureau. Before joining the bureau's Denver engineering offices in 1917, Nalder worked on the Yakima Project from 1909 to 1912 and on the Sun River Project in Montana until 1917.

Karl E. Johnson has been named manager of J. F. Pritchard & Co's Equipment Division in Kansas City. Johnson, who for the past six and a half years has represented Pritchard as Chicago district sales manager, succeeds **Raymond C. Kelly**, who has resigned.

W. L. Pearson has been made industrial manager for Southwestern Public Service Co with headquarters in the general office at Amarillo, Tex. Pearson, who began his career with Southwestern PS in 1929, will now have direct charge of the company's utilization and sales promotion activities, advertising, fuel gas purchases, and Rural Electrification Administration relationships.

Power Department Posts Filled by Allis-Chalmers

Allis-Chalmers Manufacturing Co's power department has announced the following appointments:

W. C. Sealey has been named chief engineer of the transformer section; William L. Ringland, chief engineer, motor and generator section; and T. G. A. Sillers, chief engineer, switchgear section.

Other new transformer section appointments include K. P. Wiederkehr, engineer-in-charge of transformer design; R. P. Marohn, engineer-in-charge of regulator design; and D. T. Seag, engineer-in-charge of betatron design.

Additional motor and generator section appointments include J. F. Sellers, assistant chief engineer; L. T. Rosenberg, engineer-in-charge of ac design; and Chester Weilbaecher, engineer-in-charge of dc design.

New switchgear section appointments include J. W. Timmerman, assistant chief engineer; Albert Ewy, engineer-in-charge of switchgear design, and J. H. Michael, engineer-in-charge of switchgear development.

The company's machinery department has also appointed Fred W. Bush as assistant manager of its electrical division. Bush succeeds Dr Soren Mortenson, who is retiring from the engineering field.

OBITUARY

Donald Gunn

Donald Gunn, 49, vice president of Pennsylvania Water & Power Co, died Oct. 22 at Baltimore, Md.

Gunn went to Baltimore in 1930 as a budget engineer with Safe Harbor Water Power Corp, an affiliate of Pennsylvania W&P. He was advanced to the posts of vice president and chief engineer of Pennsylvania W&P in 1947. At the time of his death he was assistant advisory engineer of Safe Harbor.

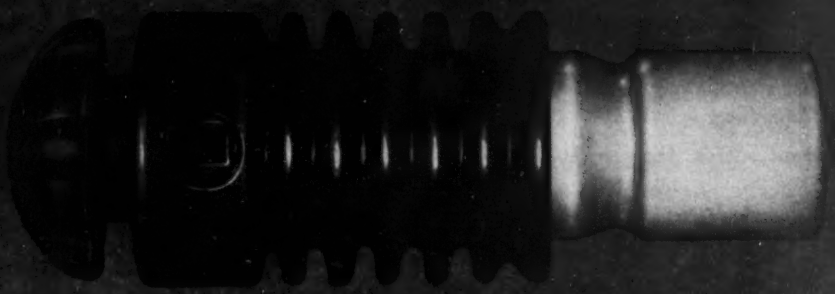
Prior to joining the Baltimore companies, Gunn was associated with Duquesne Light Co and Byllesby Engineering & Management Corp, Pittsburgh.

B. Frank Morgal, 57, a member of the Pennsylvania Public Utility Commission for the past 12 years, died at Pittsburgh Oct. 19. Before his appointment as a commission member, he had served the PUC in the bureau of accounts since 1914.

Kittridge B. Crumb, 65, retired treasurer and assistant secretary of American Gas & Electric Co, died Oct. 23 at Basking Ridge, N. J. Crumb started his 43-year service with Rockford (Ill.) Electric Co, a subsidiary of American G&E, advancing to auditor and treasurer. He retired in 1951.

George W. Davis, 70, retired manager of the Girard district for Ohio Edison Co, died Oct. 16 at Girard, Ohio. Davis joined Ohio Edison in 1905 and had served as manager at Girard from 1930 until he retired in 1947.

THERE CAN BE NO DOUBT . . .



KUHLMAN contributed this to the electrical industry

IT BEGAN IN 1939 . . . seeing the need for a safer, more convenient way of making primary line connections, Kuhlman in 1939 introduced the "Quick-Grip" bushing. It was the first insulating wire insulated connector. For several years thereafter only Kuhlman transformers were equipped with knob-type bushings.

THIS FOLLOWED . . . gradually the user-demand for this bushing became so great that other transformer manufacturers followed Kuhlman's lead and began equipping their transformers with knob-type bushings. Today these bushings are on the way to becoming a standard feature.

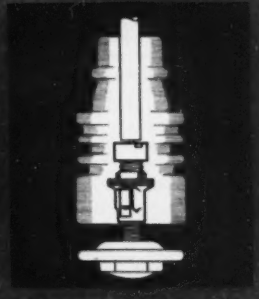
THEN, IN 1952 . . . Kuhlman improved the "Quick-Grip". The bushing is now equipped with a molded hard rubber knob instead of a porcelain knob. This means a bushing that is even safer and more convenient to use.

MAKE NO MISTAKE . . . the knob-type bushing is definitely a Kuhlman "first". The "Quick-Grip" . . . with porcelain or rubber knob . . . is distinctively Kuhlman. Kuhlman not only keeps pace with but frequently leads the industry.

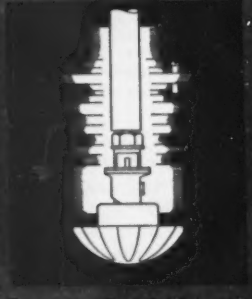
The evolution of the "quick-grip" bushing

Here is the way primary connections were made prior to the introduction of the "Quick-Grip" bushing. The terminals had to be connected and disconnected with a wrench, a hazardous operation required more time, more energy, and more parts.

This is the way connections are made with a "Quick-Grip" bushing. No tools are required, no live parts are exposed. The lineman inserts the terminal, twists the knob, and the job is done.



This is a cross-section view of the "Quick-Grip" bushing with the porcelain knob. The metal part was fitted here as insert in the porcelain knob which was then filled with lead to hold it fast.



The newer "Quick-Grip" bushing has the metal part molded into the hard rubber knob so the knob is forever tight. The knob has a better shape for grasping, withdrawing and eliminates any risk of cupping leg or fumbling.

Kuhlman ELECTRIC COMPANY, BAY CITY, MICHIGAN K E

A great name in transformers. Write for descriptive bulletins on Kuhlman power, distribution, dry type, liquid-filled and specialty units.

EXPORT REPRESENTATIVES: *International Standard Electric Corporation*, 67 Broad Street, New York 4, N. Y. Cable Address: Marconiphone, N. Y.

Have Europeans Solved Al-Cu

- **Success with bimetallic connector in Europe reported**
- **Connector uses insulating washer between copper and aluminum**
- **EEI spokesman scores domestic connector design**
- **Connector group finds European design too expensive**

To the Editor:

Past months have been significant for the publication of a number of papers before our technical societies, and articles in leading engineering publications.

The paper presented by C. E. Baugh before Edison Electric Institute in May was noteworthy for the strong indictment of the current designs of the connector manufacturers offered for aluminum-copper overhead line connections. This paper has been the subject of comment in European technical circles, in terms that are not flattering and with cause for same. Is it sound in practical or experimental determinations to present results obtained from irregular applications or from evidently inadequate designs? The "Electrical Times" (London, England) on July 10 published an editorial comment reading in part:

> "As an overhead line conductor, aluminum can today claim many advantages over copper . . . Since it is well established for use in transmission circuits, application to distribution might be thought to entail few engineering problems. . . . Recent reports from America . . . suggest that the difficulties introduced are more serious than had been expected. The danger of electrolytic corrosion at the bimetal joint is, of course, well recognized, but it had been expected that the various methods available for overcoming this would prove sufficiently effective. Indeed, cases have been cited where bolted joints between copper and aluminum on shipboard have given no trouble over a score of years. Now it is suggested that under severe test conditions, corrosion is so rapid that, even in comparatively favorable circumstances, there could be joint trouble before the useful life of the conductor is reached. So far these reports are not supported by full test results, which in view of the contrary evidence, are obviously necessary. . . . These will be watched . . . by distribution engineers in this country for whom the problem is also important."

This editorial drew a response* from C. H. Ridpath, Chief Engineer of Aluminum Wire and Cable Co Ltd, Port Tennant, Swansea, Wales, in a letter printed in the July 17 "Electrical Times" of London, England, which reads:

> "We were very surprised to see from your editorial 'Warning on Aluminum' (issue July 10) that experience with aluminum-copper fittings in America seems to have been very different from that in this country. On turning up the American reports to which your editorial refers, we find—
>
> "Amongst the conclusions reached as the result of tests, not even one mentions metal purity. This strange omission makes us wonder if its importance is appreciated . . .
>
> "Some failures were associated with copper insects sweated into aluminum parallel groove clamps; such fittings are not, as far as we are aware, used in this country. Unless care is taken in manufacture, we know from experience that trouble is likely to occur.
>
> "Other failures occurred with cadmium plated copper split-bolt connectors; such fittings can be excellent as long as the cadmium is intact, but . . . once the copper becomes exposed, corrosion of the aluminum can take place. Such fittings are not used for aluminum-copper connections to any great extent in this country. Further failures occurred with copper split-bolt connectors using bimetallic washers which are not used in this country.
>
> "The most effective system used here is not even mentioned in the American report . . . the keeping dry of the bimetallic junction by an insulating washer. This system has been used for over 25 years in this country and is standard practice here and on the Continent . . ."

* Footnote: See also Letters to Editor, p 142, Electrical World, August 25, 1952.

Some of our European friends experienced bewilderment at this sudden awakening in the U. S. to the problems cited—the same problems that had been resolved on the coasts of England, France, Africa, and India, some twenty and more years ago. It is obvious that the plethora of "problems" cited within recent months, are not motivated by altruism; no more so than the pleas of "not to abuse aluminum." In response to an explanatory letter of mine, Mr. Ridpath wrote a letter dated August 25. This reads:

> "I was . . . extremely surprised to learn of the amount of misconception you report on the question of the reliability of fittings for aluminum in the U. S. A. We have had our teething troubles in this country, but experience has shown that the principle of using an insulating washer to protect the bimetallic junction of an aluminum-copper fitting is a sound one. This view is not based on a few years' trial but on the experience of something like 25 years. It is significant that the unsuccessful experiments of the Pacific Gas and Electric Co did not include this type of fitting which is universal in this country . . .
>
> ". . . We are going right ahead with all-aluminum conductors for L. T. distribution at 240 volts, and we are also supplying similar material to tropical and sub-tropical areas. We have no hesitation in recommending aluminum for use by the sea even in tropical climates with proviso—as long as the fittings to be used are of approved design and as long as the conductors are internally greased.
>
> "Finally, I cannot lay too much stress on this question of design, and that is one reason why we have always taken responsibility for the supply of fittings with our conductor. The life of the best conductor can be wrecked at an early age by badly designed fittings."

The design of connectors common to British, French, German, Italian, Swiss, Belgian, etc, practice differs only in details in different countries. An accompanying drawing shows the principle of the separation of the copper and aluminum conductors. Another shows a connector for aluminum to copper with the washer in situ. The connectors in general for outdoor purposes do not have the insulation exposed, as in the drawings. It is generally, but not always, in the body of the connector, protected against weathering.

The principle of insulating the copper from the aluminum is in no way new. It has been used in Europe to my knowledge for the past 25 years, and is freely referred to as the recommended practice for bimetallic connections for outdoor installations. Moreover, the principle of the connector is not concerned with any distinction between transmission of distribution.

In conclusion, I would wish to re-emphasize that accessory designs, and installation methods are available to provide adequate service safeguards, if use will be made of the procedures developed in Europe . . .

Connection Problem?

Today we are not even starting from the development stage in Europe; when we do—and nothing can or will deter it—I am confident we will develop the fittings that will cost less than copper alternatives.

The faults are not inherent to the aluminum conductor. They are in the poorly designed fittings extant; there are today, unfortunately, more unsuitable fittings going onto aluminum conductors than good fittings . . .

. . . At some future date if industry demands, and acceptance warrants it, arrangements could be made to stock or fabricate in the U. S. these proven (European) designs.

Aluminum problems can best be solved by the primary aluminum producers; they are the most competent to pass judgment.

H. W. Biskeborn
Technical Director
Kaiser Aluminum & Chemical Corporation
Newark Works, P. O. Box 617
Newark, Ohio

EEI Subcommittee Chairman's Answer

To the Editor:

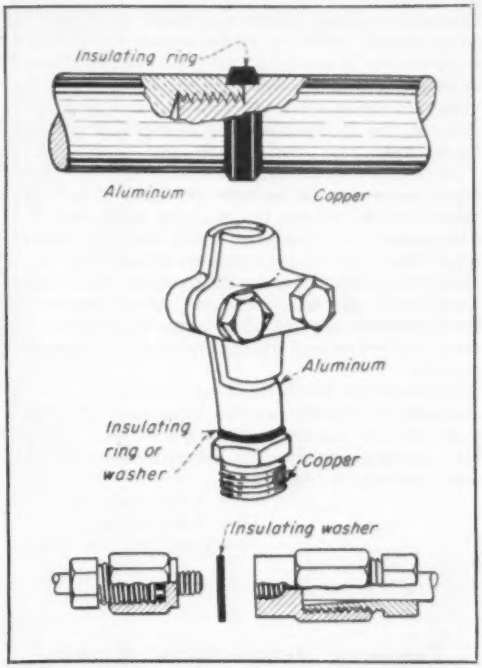
The open letter written by H. W. Biskeborn, and in particular the quoted comments of C. H. Ridpath of Wales, probably will do more to rectify an unfortunate situation than the pleas of some of the large aluminum conductor users have been able to accomplish in the past several years.

We have been very conscious of the price advantage of aluminum as a conductor for many years. The Pacific Gas and Electric Co has used aluminum conductor for over 50 years and two circuits of 350,000 circ mil all-aluminum conductor constructed in 1902 and 1904 are still in operation. We have never stopped using aluminum conductor, do not intend to discontinue its use, and regret that the types of connectors for aluminum-to-copper available in this country make it so difficult for us to resort to a much wider use of aluminum in our distribution system. . . .

Statements similar to those in the preceding paragraph were made at the Edison Electric Institute meeting in May, 1952 at Chicago and were printed in full in the June issue of the E.E.I. Bulletin. The following is a quotation from the Bulletin reprint:

"None of the remarks that follow are intended as a criticism of aluminum as a conductor material. Our continued use of aluminum and ACSR conductor is ample evidence of this. It is unfortunate, however, that, after 50 years of use, there are no satisfactory solutions to some of the problems associated with splicing, tapping, and terminating aluminum conductor."

Unfortunately this portion of the address was omitted in the rewrite which appeared in the June, 1952 Electrical World, and this omission may have tended to obscure the issue by giving a basis for the belief that a recitation of our problems is "not activated by altruism." The only points that are of importance to us are that failures of aluminum-to-copper connections in polluted atmospheres made with the various types of connectors available in this country, and recommended for such use, together with



INSULATING WASHER SEPARATION of Al and Cu is illustrated in top drawing. This principle is applied in clamp fitting and tension splice connectors

failures due to the misapplication of connectors by personnel not acquainted with proper procedures, have raised serious doubts as to the advisability of installing large amounts of aluminum conductor in distribution systems until these factors have been resolved. Many companies feel that they cannot realize the maximum economic benefit apparent in a wider use of aluminum conductor until doubts concerning the life of fittings have been allayed.

Similar failures to a greater or lesser degree have been experienced by every utility in the country that has used aluminum conductor in coastal exposures over a long period of years.

It was indeed gratifying to read the comments made by Mr. Ridpath in a letter printed in the Electrical Times of London, which refer to the various types of connectors tested on the Pacific Coast. We agree heartily with his conclusions. In answer to his comment on metal purity, the samples tested were commercially available connectors. We have reason to believe that a copper-bearing aluminum alloy was used in some of these connectors and that this contributed to the failures.

Mr. Ridpath seemed to feel that the conclusions drawn in the E.E.I. address are open to criticism in that the ground was not properly covered—presumably meaning that all types of connectors had not been tested. It should be noted that the conclusions were stated to be tentative

and the hope was expressed that further investigation would prove that some of them were wrong.

It must be remembered that there was one reason only for these tests—a desire on the part of Pacific Gas and Electric Co to utilize aluminum conductor more widely in its distribution system in urban, industrial and coastal exposures and to select from the many different types of connectors sold in this country the ones best suited for use in polluted atmospheres. Consideration was to be given to first cost, ease of application and suitability for use with hot line tools.

Mr. Ridpath apparently feels that better aluminum-to-copper connectors can be built. We agree—further, we believe that the problem can be solved rather easily and economically. We have heard before that connectors of types which have not been available commercially to us are in successful service on the continent and in other areas. Maybe Mr. Biskeborn's letter will give impetus to the development of a type of connector more suitable for use in polluted atmospheres than those that are presently available.

There are two groups that have a big mutual stake in aluminum as a distribution conductor material—the aluminum conductor suppliers and the utilities. Once this has been adequately recognized, a solution of associated connector problems will follow.

C. E. Baugh, Chairman
E.E.I. Subcommittee on
Aluminum Conductor Fittings
Pacific Gas & Electric Co
San Francisco, Cal.

Connector Manufacturers' Answer

To the Editor:

The Electrical Service Connector Institute appreciates the opportunity to answer the rather challenging letter by H. W. Biskeborn, Technical Director of the Kaiser Aluminum & Chemical Corporation.

It is perhaps unfortunate that Mr. Biskeborn has made so many rather conclusive statements in advance of having checked the controlling facts more carefully. His letter would lead the reader to believe that a problem, that has received much attention and that has been subjected to much discussion, has already been solved and that all American electric utilities have to do is to "look in the right bin" to find the complete and final answer. We just can't agree that it is that easy.

At the outset we want to remove any possible cause for misinterpretation of the second paragraph of Mr. Biskeborn's letter. That paragraph suggests that the paper that Clive E. Baugh presented to Edison Electric Institute in May, and the discussions that have continued since, have concerned themselves with tests and experiences with aluminum-to-copper connections the country over. That, of course, is not the case. To the contrary, both have been directed to problems of a climatic condition of limited area. Aluminum-to-copper connections by the millions have offered no particular problems, whether they have been made inland or in coastal areas. So to say the least, the matter is one of limited scope.

Next it should be made clear that in attacking the problem, even in a limited area, American engineers have assumed that any satisfactory technical solution would have to be a *commercial* application. There has been no lack of facility to make satisfactory aluminum-to-copper joints, if "price per connection" were no factor. The principle set forth by Mr. Biskeborn is not unknown to American connector manufacturers, for, indeed, some of them employ engineers who were born and trained and experienced in Europe. Connectors that use the insulating washer principle, however, have been deemed to be prohibitive in cost. If it were felt that aluminum-to-copper connections could not be made at a price comparable to that of copper to copper connections, American engineers might have to concede that aluminum-to-copper connections will just have to be expensive connections and electric utilities will have to pay the price. They make no such concession, however, and that is why they are putting forth every effort to solve the problem with economical and commercially practical connectors.

Obviously we agree with Mr. Biskeborn's inference that, in all but a small percentage of aluminum-to-copper connections that have been made in this country to date, the results should have been satisfactory—they have been. We agree that there is no reason to doubt that aluminum has been, and will continue to be, an eminently satisfactory conductor. We feel, however, that its increased use will present ever increasing problems and that a proper engineering attitude will be to assume that those problems will need constant attention, intensive laboratory work and field tests.

As against the implication of Mr. Biskeborn's letter and his quotations from letters by Mr. C. H. Ridpath, we are aware of numerous reports of contacts with European engineers, in which intensive interest has been shown in what American engineers have been and are doing to solve the problems that the greatly increased use of aluminum has imposed upon them.

We agree with Mr. Biskeborn and Mr. Ridpath that limited and inconclusive tests should not be generalized upon. We are not aware that they have been.

Mr. Biskeborn's letter implies (that is if we are to assume that he endorses Mr. Ridpath's statements) that American engineers are not aware of the importance of "metal purity," "proper bond of aluminum to copper in bimetal fittings" and of "adequate cadmium plating on copper split bolt connectors"—if cadmium plated connectors are put in use. We feel that inference is unjustified, for engineers employed both by connector manufacturers, by conductor manufacturers and by electric utilities are fully aware of the problems involved.

With Mr. Biskeborn's statement, "Aluminum problems can best be solved by the primary aluminum producers; they are the most competent to pass judgment," we cannot agree at all. That is, we do not agree with that part of the statement that reads "can *best* be solved." We, by all means, feel that everyone that is interested in the many problems involved should contribute his best engineering effort to help solve them. We in the connector industry pledge our engineers unequivocably to that effort. We cannot, however, concede the inference that the overall problem has already been solved—that is, that it has been solved in a commercially practical way. We feel that it will be only by continued serious hard work—and probably by connector manufacturers.

Electrical Service Connector Institute
370 Lexington Ave
New York 17, N. Y.

PICKET IS SUBDUED by two policemen outside of a Detroit Edison Co plant after he had attempted to block a roadway. Detroit Edison workers have been out on strike since Oct. 23

Five Issues Stall Agreement . . .

. . . between Detroit Edison and UWUA on a new contract. Electric service is maintained despite strike

As Local 223 of the Utility Workers Union of America-CIO continued its strike against Detroit Edison Co last week, it was learned that five issues still were in disagreement.

The issues, all requests made by the union on the company, are:

1. Increase of shift differential
2. Life insurance, hospital and surgical insurance and disability payments
3. A general wage increase of 15¢ an hour (fact finding report recommended 10¢; company offered 6¢)
4. Payment of negotiating committee while negotiating with the company
5. Modified union shop

These five issues were part of 41 issues which a special commission appointed by the governor and headed by Ronald W. Haughton held hearings on in Detroit. The commission had released its report on the findings and recommendations on Oct. 13. Previously the governor had granted an extension for the completion of the report until and including Oct. 13.

On Oct. 23, however, about 4,000 utility workers in Detroit walked off their jobs while the UWUA was still attending mediation talks. These talks were being held in accordance with a state law requiring ten days of such proceedings after a fact-finding report has been made.

Equipment Tampering . . . Soon after the strike began, several of the company's substations in the Detroit area were entered, a number of switches were tampered with, and signal circuits were opened.

Service, however, has been maintained by 1,300 supervisory personnel, who are living in the company's four major power plants. In fact on Tuesday, Oct. 29, while the strike was in progress, a record daily output of 31,596,000 kwhr was put out by the company.

Edison maintains the strike is illegal, on grounds that the union did not comply with the provisions of Michigan's Bonine-Tripp Act, which requires that a state-conducted strike poll be conducted before a strike is called.

The union maintains that the Supreme Court ruled that the state law is unconstitutional, and indicated that it would not participate in such an election. UWUA conducted its own secret ballot earlier.

AG&E Produces Films On Supervisory Problems

Linemen, meter people, office people and power plant employees became actors recently while American Gas & Electric Co was producing a series of sound-slide films on supervisor-employee communications.

Designed to stimulate discussion in supervisory group meetings, each film tells the story of a supervisory problem arising from poor communications or the lack of the two-way flow of information. The stories are based on actual happenings on the system.

Each story builds to a climax and stops. No attempt is made in the films to solve or evaluate the problems. People in the discussion groups will take each story apart to find what went wrong, how to remedy the situation and, most important, how to prevent such situations from arising in the first place.

Higher Wages in Ontario

Wage increases from 15¢ to 21¢ an hour were gained by some stationary engineers employed at the Ontario Hydro's Richard L. Hearn Toronto plant and Scarboro plant under a new agreement between Local 796 of AFL International Union of Operating Engineers and the Hydro-Electric Power Commission of Ontario.

Meeting the Nation's Growing Power Load

Greater System Capacity through new and higher Breaker Ratings

Heavy-power concentrations and extensive system interconnections have created demands for circuit breakers with unprecedented characteristics and ratings. Yesterday 10,000,000 kva for 230,000 volts looked like the ultimate . . . today we are approaching 15,000,000 kva. Westinghouse has developed and already has installed other new and higher ratings for a wide range of voltages.

What's the meaning of these new ratings? Higher voltages will carry larger power blocks more economically. Higher interrupting capacity makes greater concentration of generation or of transmission lines at one location possible. With the same system stability, extra transmission lines and current-limiting reactors are eliminated.

Westinghouse started getting ready for these new interrupting peaks 27 years ago, when the High-Power Laboratory was created. The facts gained from thousands of short-circuit tests . . . proving ratings as high as 10,000,000 kva . . . have enabled us to reduce breaker operating time, size, and amount of equipment to do the job.

It's another example of Westinghouse thinking ahead. It's an awareness of all utility needs . . . keeping breaker capacity, for example, in step with system expansion, so that your investment in generating and transmission facilities can be protected. With the realization that America's power appetite is growing, marches our responsibility to build apparatus . . . that is more efficient, economical and reliable. J-97162

YOU CAN BE SURE . . . IF IT'S

Westinghouse

New ratings available

Since 1945 Westinghouse has developed the following new circuit breakers:

34.5 kv, 2,500,000 kva
69 kv, 3,500,000 kva
115 kv, 3,500,000 and 5,000,000 kva
138 kv, 5,000,000 and 10,000,000 kva
161 kv, 5,000,000 and 10,000,000 kva
230/196 kv, 10,000,000 kva

Westinghouse is the first company to build and have installed 161-kv, 10,000,000-kva breakers. 230-kv, 10,000,000-kva breakers already have several years of field experience. Westinghouse also will soon deliver a substantial number of 138-kv, 10,000,000-kva breakers.

Westinghouse also has converted existing breakers to ratings of 10,000,000 kva by changing to new interrupters . . . extending the useful life of present equipment.

New pneumatic mechanisms

Modern power requirements call for high-voltage circuit breakers capable of initial reclosure in 20 cycles or less. The newly developed Westinghouse pneumatic-operating mechanism combines high-speed reclosing with mechanically trip-free opening so that the breaker cannot be held closed after a tripping impulse has been given. Further, latches are reset so rapidly that subsequent reclosures are possible after intervals only a little longer than the initial reclosure.

New surge-tank development

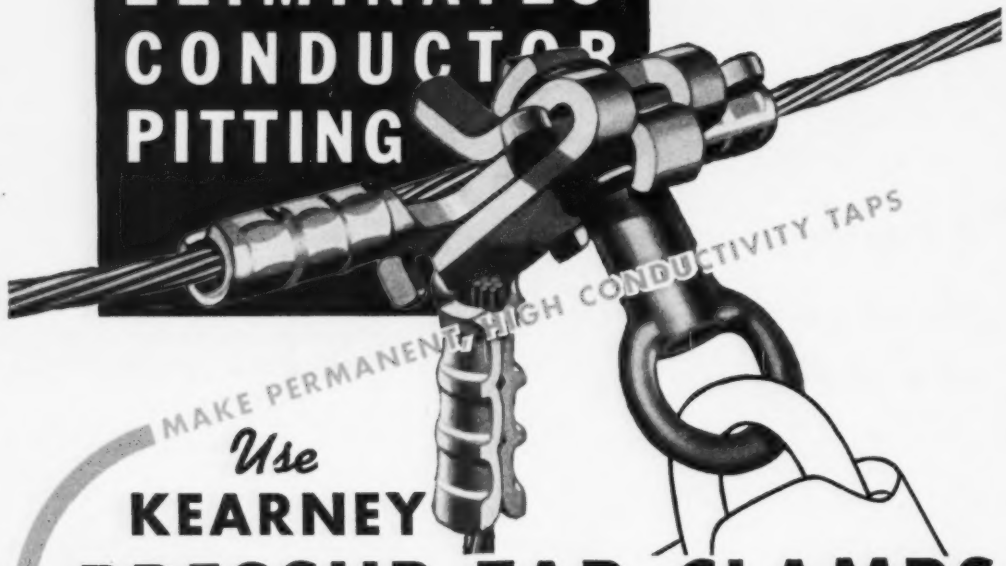
High-current arcs manifest themselves as shock waves inside the tank. To reduce the impact on the bottom of the tank and the foundations, and to eliminate rebound, surge tanks are mounted in the breaker to absorb the shock. Here again, Westinghouse engineering development and testing make higher ratings possible.

Chronology of breaker developments

In 1930, the original "De-ion®" grid reduced breaker opening time from 30 cycles down to a new standard of 8 cycles. The Multi-flow grid in 1940 made higher ratings possible and reduced standard opening time to 5 cycles. The extension of the Multi-flow grid principle has resulted in smaller sizes, lower oil content and higher interrupting ratings, and faster opening times down to 3 cycles.

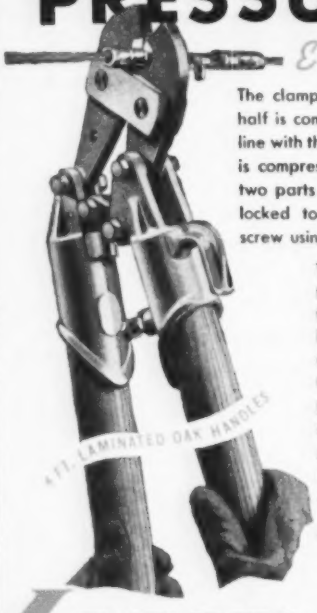
To learn how these new developments can help you, call your Westinghouse Electric Utility representative . . . or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

ELIMINATES CONDUCTOR PITTING



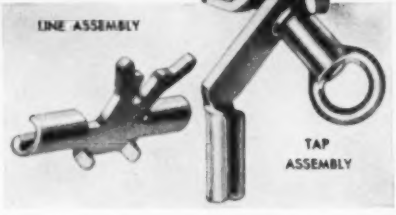
MAKE PERMANENT, HIGH CONDUCTIVITY TAPS

Use KEARNEY PRESSUR-TAP CLAMPS



Easy to Install

The clamp consists of two parts. One half is compressed onto the energized line with the Pressur-Tap Tool; the other is compressed onto the tap wire. The two parts are then easily and quickly locked together with the large eye screw using a standard clampstick.



The new Kearney Pressur-Tap Clamp features high conductivity connections line to clamp and clamp to tap. High pressure, large area contacts minimize conductor flow; seal out corrosion between critical surfaces. Conductor pitting is eliminated because arcs, if they occur, will jump between clamp halves; *not* between conductor and clamp. Permanent, trouble-free taps reduce maintenance, provide uninterrupted service under heavy loads.

Reduce your clamp inventory. All size line and tap assemblies are interchangeable. Pressur-Tap Clamps are made of heavy aluminum metallized with copper where required. Clamps are available for any type or size conductor from #6 solid aluminum to 250 MCM stranded copper. Write today for catalog information and prices to Dept. 21.

JAMES R. KEARNEY CORPORATION
4224-42 CLAYTON AVE., ST. LOUIS, MO.
Canadian Plant: Guelph, Ontario

Kearney Products

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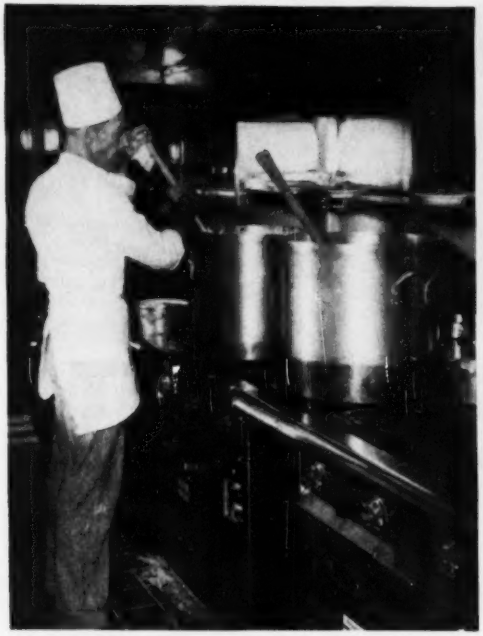
FOR BETTER CONSTRUCTION—SAFER MAINTENANCE



FOOD PREPARED with these ranges in McCulloch's electric kitchen . . .

FINDS ITS WAY to the assembly line via mobile carts like this one

Winning Employees With Electricity

Los Angeles industrial firm overcomes labor competition of teeming aircraft business by electrifying recreation center food preparation equipment

Electricity has played a major role in the layout of a 90,000 sq ft recreation building, which has helped solve an employee problem for McCulloch Motors Corp, Los Angeles. Because of it, company officials say, normal turnover in skilled help has been cut one-third, despite the tough labor competition provided by the booming West Coast aircraft industry.

The lavish employees' center—complete with eight bowling alleys, a 300-seat dining room, cafeteria, snack bar, movie theater and several lounges—is electric throughout, in spite of the fact that the L.A. area abounds with natural gas.

The kitchen, alone, includes three single-oven electric ranges; a two-sectioned electric roast oven; a complete electric baking department; an electrically-equipped salad section; three garbage disposal units; two deep fat fryers; and an electrically-heated bain marie.

The bakery has its own electric refrigerator, a two-plate electric hot plate, a 10-quart steam cooker, three electric baker's stoves, and a proofing cabinet.

There are three walk-in refrigeration boxes: one for meat (with a sharp freezing section for frozen foods); another for vegetables; and a third for dairy products. A flake-ice making machine serves both cafeteria and snack bar.

Supplementing the services of its recreation building, McCulloch directors have added an unusual wrinkle in the "keep-the-employees-happy" drive—mobile restaurants. Plant engineers have rigged four former airport baggage carriers with stainless steel compartments, each having a cold compartment for milk and perishable foods and a thermostatically-controlled warming department.

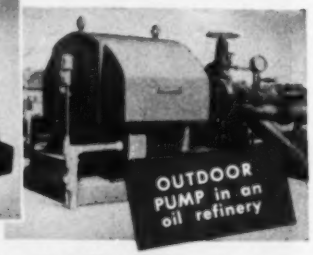
The mobile eateries move from recreation building kitchens right to the production line to serve employees during ten-minute breaks and mealtimes. A girl riding the cart dispenses coffee from 10-gallon urns set outside the food sections, which she also patrols.

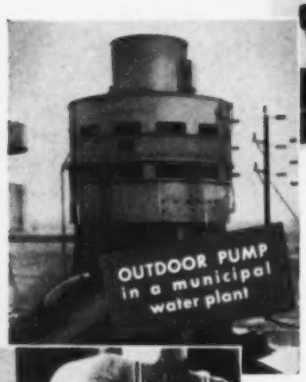
Both refrigeration and heating units are electrically powered. When a cart stops in a department of the plant an extension cord plugs into outlets to operate the cooling and warming systems.

The carts already have proved their worth. In addition to doubling serving capacity of the recreation building, break periods have been kept to the authorized 10 minutes. Employees no longer spend most of their time walking to and from outside caterers' trucks, and thus get a better chance to relax during the breaks.

It's all part of the plan to prove that the McCulloch pasture is "greener" than those which surround it.

Put them outdoors...



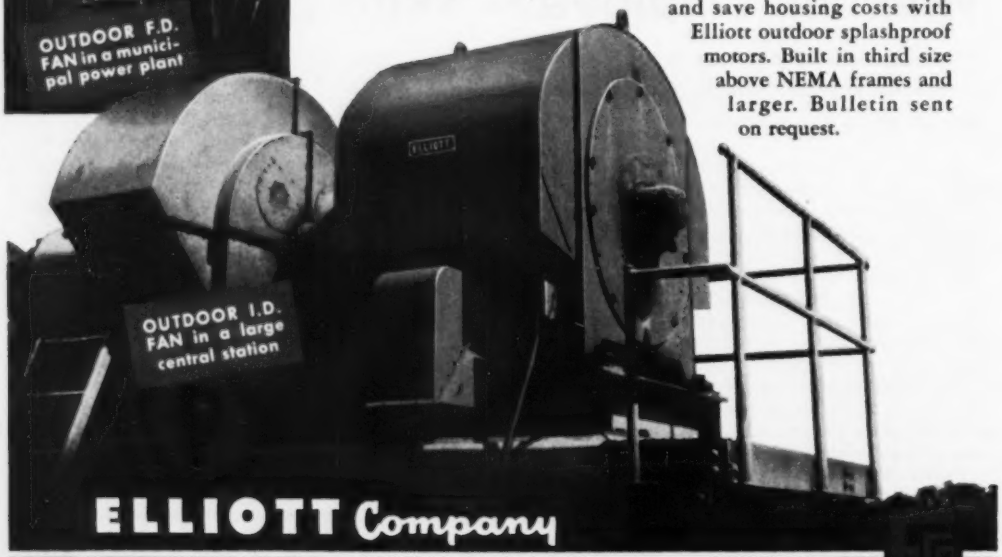


with ELLIOTT

OUTDOOR SPLASHPROOF MOTORS

These motors solve every difficulty of outdoor electric drive without the expense and complexity of totally-enclosed construction, of special vented foundation, or of protection from weather other than their own enclosure. Their "Fabri-Steel" construction permits of baffling design and air filtering which in hundreds of outdoor installations in all parts of the United States has proven immune to wind-driven snow, sleet, rain, fog, salt spray and dust-storm.

Put your motor drives where you want them, and save housing costs with Elliott outdoor splashproof motors. Built in third size above NEMA frames and larger. Bulletin sent on request.



ELLIOTT Company

Ridgway Division
RIDGWAY, PA.

For Elliott Crocker-Wheeler industrial motors, 1-200 hp, write Elliott Company, Jeannette, Pa.
Plants at: JEANNETTE, PA. • RIDGWAY, PA.
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DISTRICT OFFICES IN PRINCIPAL CITIES

R2-16

Chicago Launches 4-Part Electric Dryer Campaign

Departure from past sales promotion policy may lead to new methods of getting appliance saturations

In the belief that electric clothes dryer sales in Chicago have suffered because of lack of a simple installation plan for the customer and the dealer, Commonwealth Edison launched on Sept. 1st a clothes dryer program that includes such a plan. It consists of four major parts:

(1) The Commonwealth Edison promotion plan.

(2) Advertising program.

(3) Electric Association activity featuring clothes dryer show.

(4) Distributors promotional program.

Promotion Plan . . . Commonwealth Edison's plan marks a departure from past policy in promotional activities which have featured: (1) large expenditures for generalized advertising and (2) wiring subsidies. Advertising in past campaigns has promoted the product but has not made a direct appeal for immediate action in the form of a purchase. It has told customers to "see your dealer."

In the new program Commonwealth Edison offers an allowance to distributors for each dryer installed in Chicago: $8 for installations in homes already having three-wire services; and $20 for installations in homes with only two-wire services.

To qualify under this program:

(1) Distributors must promote electric dryers by providing an installation plan for all dealers. This plan must provide for a flat quotation of installed cost.

The quotations may be different as between three-wire and two-wire services, but must be the same in each group.

Distributors and dealers will set up their own plan and determine how much of the installation cost, if any, will be paid by the customer. The dealer will then be in the same position he is now in with the gas dryer. He will be able to make the sale and request the distributor to make the installation and handle all matters pertaining to installation.

Advertising . . . Under the advertising phase of the program Commonwealth Edison has set aside a $15,000 cooperative advertising fund. To draw on this fund for his own advertising a distributor's ads must:

(1) Be "selling" advertising.

(2) Carry price.

(3) Feature electric units only.

(4) Mention the distributor's installation plan.

(5) Carry the slogan "It's Better Because It's All Electric." This slogan will be the theme of the campaign and will be carried on the Commonwealth Edison's car cards, bill boards and advertising.

Distributors are requested to mention the electric clothes dryer show on the sales floor located in the Edison Building.

No distributor will be allowed to draw more than $2,000 from this fund.

Electric Association Activity . . . The Chicago Electric Association will sponsor the electric clothes dryer show in the Edison Building. Commonwealth Edison will provide booth space for all makers of dryers who want to show their products. Also the company will provide some general and supplementary displays.

The home economics approach will be used in the dryer show. Commonwealth Edison home economists will demonstrate dryers on a stage on the sales floor. Factory home economists will be given an opportunity to demonstrate on the stage.

The Company will not take direct orders at the show but will pass leads on to the distributor. It is anticipated that distributor personnel will assist at the dryer show during the expected rush hours.

Distributor Promotion . . . Distributors will contribute to a sales promotion fund which will be administered by an Electric Association committee made up of distributor, dealer and utility representatives. This fund is expected to reach $3,000 to $5,000. It will be used primarily for dealer window displays.

Adequate Wiring Stressed In Seven-Article Series

Evidence that the adequate wiring idea is taking hold among home designers and builders is provided by Practical Builder, trade journal for the industry. The magazine is publishing a series of seven articles pointing out the sales possibilities in giving customers homes that will take care of current and future electrical needs. Also stressed is the function of the electrical contractor and practical building ideas with a full collection of photos and drawings.

Among titles in the series: "What builders should know about electrical contractors;" "Design and installation of electrical service entrance and branch circuits;" "Design principles governing location of outlets and switches;" and "Built-in lighting construction techniques."

Electrically Heated Mat Keeps Feet Warm

A rubber mat with a built-in radiant heating unit has been developed by the mechanical goods division, United States Rubber Co. It has been tested successfully in theaters, warehouses, police booths, toll booths and in unheated or refrigerated areas of industrial plants to provide greater comfort for employees who encounter cold working conditions on the job. Normal operating temperature for the heater is about 35 degrees above the surrounding temperature. This temperature is warm enough to give adequate comfort but not hot enough to feel uncomfortable under foot. The rubber heating mats are being marketed under the "Uskon" trade name.

Pin-Up Clock Radio Developed by Motorola

Novel version of a clock radio, a pin-up model that can be attached to a wall, is being marketed by Motorola, Inc. Set comes with two wall hooks that can be pressed into plaster or wood surfaces. Fitting into recesses in back of the case, they insure that the set will remain level when the radio is being tuned or the clock adjusted. Clock radio switch turns radio on at chosen pre-set time.

FINANCIAL

Security Sales Show Marked Upturn

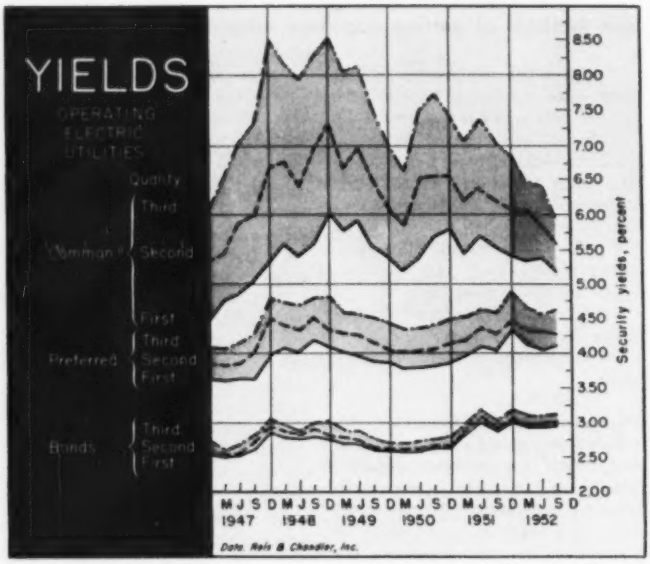
New financing during third quarter was nearly double that reported a year ago

Electric utility companies returned to the market to sell substantial amounts of securities after Labor Day following the usual mid-summer respite. During August only 7½% of the third quarter's new financing was completed.

There were eight electric companies selling debt securities, all via competitive bidding channels. Four out of seven companies used this method to sell preferred stock while only one company out of seven sold common stock through bidding invitations.

Security Sales Up . . . Third quarter security sales for new money totaled $225 million, nearly double the amount sold in the same period of 1951. Public offerings for the first nine months of 1952 totaled $1.3 billion as against $843.8 million for the like period in 1951.

This year's figure excludes approximately $115-million debt issues and preferred stock sold privately to provide funds for constructions needs. In 1951, private placements totaled $45 million. Of the nine months public sales, 59% represented debt securities, 12% preferred stock and 29% common stock issues.



SECURITY YIELDS on bonds rose very little for the third quarter of 1952. Preferred stock yields followed no pattern while common stock yields fell slightly, indicating higher prices

Higher Interest Costs for Government . . . Debt costs on new issues continued to rise moderately. Reasons can be found in the further tightening in the money market during the third quarter as evidenced by the fact that the Government had to pay the highest cost in over 18 years on 91-day bills and 14-month notes. Yields on long term Government securities increased 14 basis points. During the month of September, electric companies encountered considerable competition for new money from substantial debt offerings by industrial companies. A large amount of tax exempt obligations were also offered at this time.

Bond Yields Up . . . Electrical World's index of bond yields rose very slightly during the quarter. The preferred stock market, as measured by this index, followed no well defined pattern while yields on common stocks went off slightly. Stock trading in general was light and little change occurred in the averages.

The following electric companies raised their dividends during the third quarter, bringing to 26 the number of companies making more generous disbursements this year: Central & South West Corp, Citizens Utilities Co, Iowa Electric Light & Power Co, Iowa Public Service Co, New York State Electric & Gas Corp, Northwestern Public Service Co, Potomac Electric Power Co, Texas Utilities Co, and Wisconsin Power & Light Co.

Public Offerings—Electric Utility Securities
(Thousands of Dollars)

	Nine Months of 1952			Nine Months of 1951		
	New Money	Other	Total	New Money	Other	Total
Bonds, Notes and Debentures	771,559	.....	771,559	538,234	9,866	548,100
Preferred Stocks	154,048	.....	154,048	27,884	.....	27,884
Common Stocks*	374,249	5,601	379,850	263,673	4,154	267,827
Total	**1,299,856**	**5,601**	**1,305,457**	**829,791**	**14,020**	**843,811**
	First Quarter of 1952			**First Quarter of 1951**		
Bonds, Notes and Debentures	295,800	.....	295,800	238,634	9,866	248,500
Preferred Stocks	60,983	.....	60,983	23,660	.....	23,660
Common Stocks*	80,347	5,601	85,948	120,585	.....	120,585
Total	**437,130**	**5,601**	**441,731**	**382,879**	**9,866**	**392,745**
	Second Quarter of 1952			**Second Quarter of 1951**		
Bonds, Notes and Debentures	341,759	.....	341,759	291,600	.....	291,600
Preferred Stocks	46,885	.....	46,885	2,000	.....	2,000
Common Stocks*	249,239	.....	249,239	106,104	.....	106,104
Total	**637,883**	.....	**637,883**	**339,704**	.....	**339,704**
	Third Quarter of 1952			**Third Quarter of 1951**		
Bonds, Notes and Debentures	134,000	.....	134,000	78,000	.....	78,000
Preferred Stocks	46,180	.....	46,180	2,224	.....	2,224
Common Stocks*	44,663	.....	44,663	36,984	4,154	41,138
Total	**224,843**	.....	**224,843**	**117,208**	**4,154**	**121,362**

* Offerings to stockholders under subscription rights are included in same quarter as the date of stock record.

Today in Utility Finance

YIELDS (%)

Quality	Bonds			Preferred Stocks			Common Stocks		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
DATE									
1952									
Oct. 30	**3.00**	**3.05**	**3.18**	**4.06**	**4.27**	**4.60**	**5.25**	**5.61**	**6.16**
Oct. 23	3.02	3.07	3.19	4.07	4.30	4.62	5.33	5.67	6.14
3rd 1952	2.99	3.03	3.16	4.10	4.26	4.61	5.18	5.50	5.96
2nd 1952	2.95	3.00	3.09	4.05	4.31	4.60	5.38	5.85	6.42
1st 1952	2.95	2.99	3.13	4.11	4.29	4.66	5.35	6.03	6.47
4th 1951	3.02	3.07	3.21	4.32	4.50	4.91	5.42	6.18	6.84

Data: Reis & Chandler, Inc.

EARNINGS

Company	Period Months Ended		Net Income 1952	Net Income 1951	Earnings Per Common Share 1952	Earnings Per Common Share 1951
Alabama Power, consolidated	12	Sept.	$11,726,611	$10,412,266	$....	$....
Central Power & Light	12	Sept.	4,675,118	4,245,244	....	....
Consolidated Edison Co of N. Y.	12	Sept.	43,313,353	38,579,175	2.51(j)	2.24(j)
Consumers Power	12	Sept.	20,113,957	19,839,526	2.71(a)	2.93(a)
Dallas Power & Light	12	Sept.	3,852,719	3,515,482	....	....
Florida Power & Light	12	Sept.	7,129,699	6,499,941	2.63	2.44
Georgia Power	12	Sept.	11,644,247	9,119,696	....	....
Gulf Power	12	Sept.	1,670,919	1,116,820	....	....
Iowa Southern Utilities	12	Sept.	970,145	803,529	1.39(b)	1.60(b)
Kansas City Power & Light	12	Sept.	5,672,080	4,335,708	....	....
Middle South Utilities, consolidated	12	Sept.	13,232,044	10,724,318	2.08(c)	1.84
Mississippi Power	12	Sept.	1,944,537	1,809,369	....	....
Niagara Mohawk Power, consolidated	12	Sept.	23,059,807	19,728,515	1.99	1.94
Northern Indiana Public Service	12	Sept.	8,209,587	7,748,606	2.26(e)	2.22(e)
Portland General Electric	12	Sept.	3,650,872	3,329,866	2.66(f)	2.66(f)
Southern Co, consolidated	12	Sept.	19,931,371	15,900,404	1.16(g)	0.97(g)
Tampa Electric	12	Sept.	1,986,942	1,824,806	3.22(h)	3.05(h)
Texas Electric Service	12	Sept.	8,066,111	6,241,386	....	....
Texas Power & Light	12	Sept.	7,145,239	5,971,174	....	....
Virginia Electric & Power	12	Sept.	11,908,306	10,192,721	1.69(i)	1.64(i)

Notes—(a) Based on 6,176,693 shares in 1952 and 5,615,176 shares in 1951; (b) Based on 577,441 shares in 1952 and 400,283 shares in 1951; (c) Including tax reduction due to amortization of emergency facilities; (e) Based on 3,084,199 shares in 1952 and 3,000,356 shares in 1951; (f) Based on 1,365,000 shares in 1952 and 1,250,000 shares in 1951; (g) Based on 17,076,669 shares in 1952 and 16,306,494 shares in 1951; (h) Based on 616,776 shares in 1952 and 598,441 shares in 1951; (i) Based on the shares outstanding at the end of each period and before giving effect to extraordinary reduction in federal income tax; and (j) Based on 13,452,635 shares in 1952 and 12,928,899 shares in 1951.

FINANCING

Company and Description	Amount of Offering ($000)	Offering Price	Yield to Public
WEEK OF OCTOBER 30-NOVEMBER 5			
None			
WEEK OF NOVEMBER 6-12			
Common Stock			
Pacific Gas & Electric—78,684 sh (North American Co will sell this stock competitively. It was acquired when North American Utility Securities Corp, a former subsidiary, was dissolved)	.....	.....	.....
SCHEDULE FOR NOVEMBER TO DECEMBER			
Bonds			**Bid Date**
Long Island Lighting—1st mtg 1982	$20,000	.....	Nov. 17
Gulf States Utilities—1st mtg 1982	10,000	.....	Nov. 24
New Orleans Public Service—1st mtg 1982	6,000	.....	Dec. 15
Common Stock			
Hawaiian Electric—50,000 sh (being offered commonholders on 1-for-10 basis, record Oct. 3 to expire Nov. 26; no underwriting)	$1,000	$20.00	10.00%*
Duquesne Light—250,000 sh†	.....	.....	Nov. 20
Cleveland Electric Illuminating—557,805 sh (to be offered commonholders on 1-for-5 basis, record Nov. 24 to expire about Dec. 19)	.....	.....	.....
UNSCHEDULED AND UNDER CONSIDERATION			
Bonds			
Central Maine Power—1st general mtg	$6,000	.....	.....
Toledo Edison—1st mtg	7,500	.....	.....
Central Hudson Gas & Electric—1st mtg	6,000	.....	.....
Florida Power Corp—1st mtg	15,000	.....	.....
Ohio Power—1st mtg	22,000	.....	.....
Preferred Stock			
Ohio Power—100,000 sh $100 par	10,000	.....	.....

Notes—* Dividends are subject to 2% Hawaiian withholding tax. If this tax is deducted, the yield would be 9.80%. † 170,000 shares will be sold by Philadelphia Co and 80,000 shares will be sold by the company as "new money."

Oral Argument Scheduled Jan. 12 in 'Missouri Case'

Oral argument in the "Missouri Case" is set for Jan. 12 before a U. S. District Court in Washington. In the meantime attorneys for ten Missouri electric companies and attorneys for government agencies must submit their findings of fact and briefs.

The ten electric companies are charging that Southwestern Power Administration and Rural Electrification Administration exceeded their legal authority in undertaking contracts with five Missouri generating and transmission cooperatives.

Testimony in the present trial was concluded Oct. 30 after SPA Administrator Douglas G. Wright had held the witness stand for three and one-half days. First phase of the trial consumed nearly three weeks.

Cross-examination of Wright brought out these points:

- It would be possible for SPA to dispose of its hydroelectric power without integrating its facilities with the proposed co-op steam plants.
- Varying amounts of steam and hydro-generated energy would be transmitted over the integrated transmission system of SPA and the co-ops.
- Facilities to be constructed by the co-ops and leased to SPA may be used to deliver power to customers other than the co-ops.

Wheeling Contract Cited in Saving to USBR Client

A wheeling contract with Pacific Gas & Electric Co has enabled Bureau of Reclamation to sell power to one of its preference customers at an average savings of 46%.

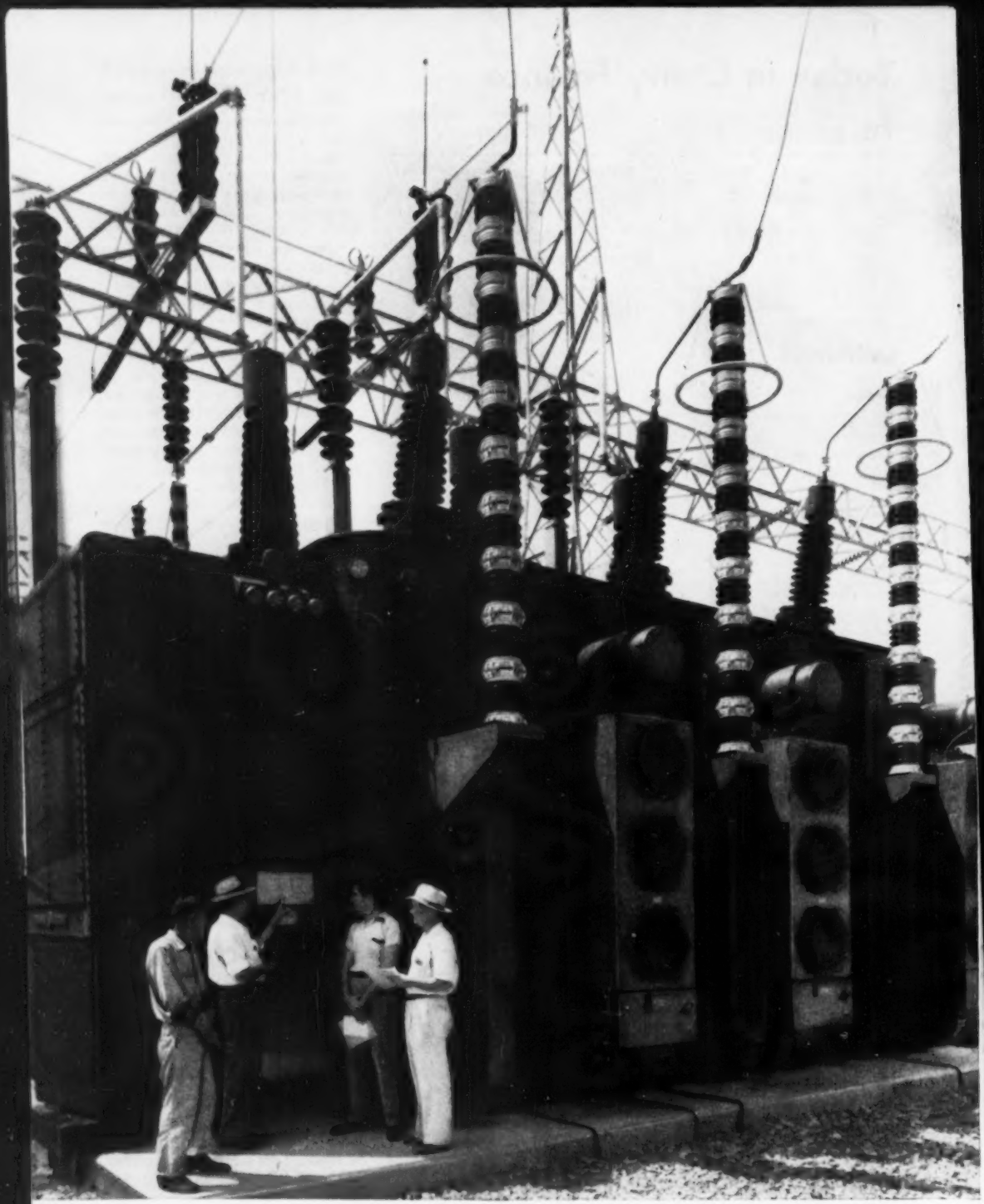
This is the claim of the bureau in a recent statement on its sales to West Side Irrigation District of Tracy, Calif. Here are the comparative figures for the 12-month period ending in August of this year:

Payment under PG&E rates would have been $42,378.76.

Actual bureau rates were $22,-876.91.

Difference saved (46%) was $19,-501.85.

Pacific G&E commented that Reclamation had not said specifically what factors were included in determining the saving. The company said it could not confirm the figure by comparing the two bills for power.



ONE-PIECE TANK contains record 156,000-kva "concentric layer" autotransformer and the series transformer for load-ratio-control. Installed at West Frankfort, Ill., this unit is cooled by the directed flow of forced oil through the windings and core.

230-kv "CONCENTRIC LAYER" autotransformer packs record 156,000 kva in one-piece tank

New unit for Illinois Power Company shipped upright in one-piece tank to minimize installation expense

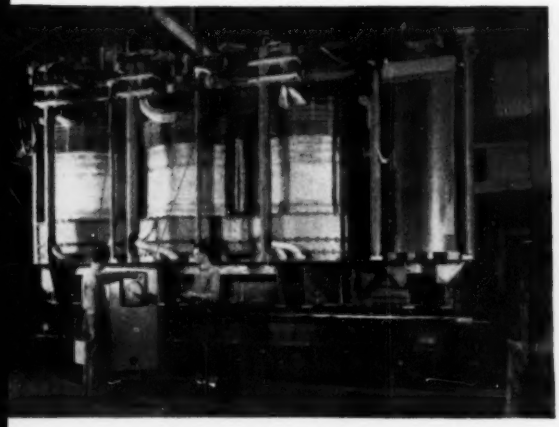
Built for the Illinois Power Company of Decatur, Illinois, this G-E "concentric layer" autotransformer rated 156,000 kva (output) will tie a 230-kv system to a 138-kv system to help supply power for an atomic energy plant at Paducah, Kentucky.

Weight, size held down. The use of "concentric layer" high-voltage windings permitted the entire core and coil assembly, including the load-ratio-control series transformer, to be fitted into a one-piece tank which was small enough to be shipped upright, ready for installation.

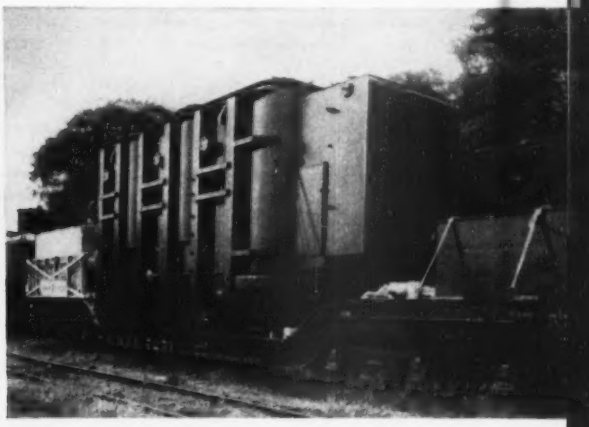
In this winding, the conductor is wound in concentric layers separated by cylinders of insulation. These layers are connected in series so that voltage stresses between the layers and between high- and low-voltage windings are only the voltage of one layer. Bulky insulation between high- and low-voltage windings is not required since the necessary insulation is distributed efficiently throughout the winding. Weights and dimensions are substantially reduced permitting a larger kva unit to be shipped upright in a single-section tank.

High impulse strength is inherent in "concentric layer." There are no harmful oscillations under impulse because voltage distribution is essentially uniform throughout the winding. As a result, voltage stresses can be calculated accurately, and insulation applied precisely.

For power systems, 161 to 330 kv and higher. If you use or contemplate using 161 to 330 kv or above in high-capacity ratings, it will pay you to review the data on "concentric layer" design. Ask your local G-E Apparatus Sales representative for bulletin GER-129, or write to Section 401-36, General Electric Company, Schenectady 5, New York.



LOWER WEIGHT and smaller size of "concentric layer" design results from improved space factor—elimination of bulky insulation between low- and high-voltage windings.



SHIPPED UPRIGHT on a special drop-frame railroad car, this 156,000-kva "concentric layer" unit was installed easily without the use of cranes or other hoisting facilities.

GENERAL ELECTRIC

$3-Billion Income Forecast . . .

. . . for utilities by 1960 from major electric appliance usage. GE's Linder makes prediction at Security Analysts' meeting

Electric utility revenues from the use of major electric appliances will approximate $3 billion by 1960, more than double the $1.3 billion in 1951.

This forecast was made by Clarence H. Linder, general manager of General Electric Co's Major Appliance Division, in an address delivered at a recent meeting of the New York Society of Security Analysts.

May Hit $5-Billion Mark . . . Linder also forecast that industry-wide retail billings of major electric appliances would total almost $5 billion by 1960 compared with approximately $3 billion last year.

In his talk on "The Major Electrical Appliance Industry and Its Impact on the Electric Utilities," Linder said that residential customers presently use 27% of the energy produced by electric utilities in the United States. Sale of this energy for residential use accounts for more than 41% of the revenue of electrical utilities, Linder said. And 55% of the residential revenue of the electric utilities comes from the use of major appliances.

Expect 99% Home Electrification . . . Linder remarked that in the two decades from 1930 to 1950 the number of wired homes in the United States increased to 39 million from 20.5 million. By 1960, he continued, appliance volume will have had the stimulus of an estimated additional 10.8 million wired homes, which will bring the total to nearly 50 million. It is expected, he added, that 99% of all of the nation's homes will be electrified by 1960.

He reported refrigerators will represent 35% of the major appliances sold this year and washers will account for 27% with the remaining major appliances only 38%. Linder said, "By 1960 our forecast is that these other major appliances will have grown to 53% of the total unit sales."

In addition he directed the attention of the utilities to appliances other than the refrigerator as a means of helping to flatten out the utility load curve and to thus raise the load factor.

More Appliances, More Kwhr . . . "To live electrically, a family should have, in addition to good lighting, a water heater, range, room air conditioner, clothes dryer, food freezer, electric sink, refrigerator, ironer, and automatic washer in the home," Linder said. "These appliances require 8,140 kwhr annually with normal usage. On the other hand, the average residential consumption of electricity purchased last year was only 2,004 kwhr, according to the Edison Electric Institute."

He added that "The increased use of these appliances means greater energy sales at residential rates, which return the great profits."

Offers Suggestions . . . In an attempt to obtain increased consumer use of the low volume appliances, Linder suggested several ways in which the electric utilities could cooperate with the major appliance industry. Among those he pointed out were: Reduction in the cost of wiring to modernize a household system for the installation of appliances, establishment of parts and service departments, sponsorship of cooking schools, and setting up of sales training courses.

Linder also forecast a continuance in 1953 of the buyer's market that developed this year in major appliances. He said, however, that prices during the coming months will be firm and "that the industry must take steps to increase its prices to reflect increased labor and material costs within the limits imposed by the price control restrictions."

Allis-Chalmers Reports Increase in Net Sales

Allis-Chalmers Manufacturing Co's net sales for the first nine months of 1952 totaled $384,600,892, a 20% increase over 1951 when sales for the first three quarters amounted to $320,354,570. Sales for the third quarter of 1952 totaled $117,459,005.

Net income for the first nine months of 1952 reached $17,752,677, equal to $5.99 per share of common stock, compared with $15,696,804, equal to $5.85 per share.

For the third quarter of this year, net income was $6,242,370, equal to $1.94 per share of common stock. This compares with net income for the third quarter of 1951 of $5,024,110, equal to $1.84 a common share.

Electrical Research Unit Is Established by Kaiser

Kaiser Aluminum & Chemical Corp has formed an electrical research department at its Trentwood plant near Spokane, Wash., to develop new and improved uses of aluminum as an electrical conductor.

The program will include development work on new and improved types of aluminum bare and insulated conductors. Special equipment will be set up to investigate the performance of television leads, power cable connectors, and other cables and cable components. Tests will be under controlled, simulated service conditions such as cyclic loading, salt-fog sprays and vibration.

Head of the department is Dr E. W. Greenfield, who has been associated with the company's metallurgical research department at Trentwood. Present staff members are Dr L. F. Roehmann, senior research electrical engineer; Alan Selker; Jack Trebby; L. Boleraczky; Charles Lang; and Mrs. Zita Hotchkiss.

Sylvania Electric's Sales Establish New Records

Sylvania Electric Products, Inc, has reported that sales for the first nine months of this year established a new company record of $162,222,117, a 12% increase above the previous high of $144,202,340 for 1951.

Sales for the third quarter of 1952 also set a new company record of $57,995,494, an increase of 43% over the $40,379,761 listed for the corresponding period of 1951. The previous record for a third quarter was established in 1950 when sales reached $44,692,219.

Net income for the nine months amounted to $5,031,701, equal to $2.18 per share of common stock, against $6,169,504, with $3.16 per

When emergencies cripple your system

— CALL ON GraybaR

Snow, sleet, wind, flood, fire — *each* is a potential crippler of service . . . a forerunner of possible full-scale emergency.

That's why — when elements strike — utilities call Graybar first. From experience, they've discovered Graybar's stand-out facilities for delivering emergency replacement items *fast* — wherever and whenever they're needed.

• A nation-wide network of Graybar offices and warehouses provides ready accessibility to stocks of essential pole-line supplies.

• Experienced, emergency-trained Graybar personnel have the know-how needed to initiate immediate action and efficient follow-through.

• Alert Graybar suppliers are always willing to co-operate in filling extraordinary needs . . . to add their weight to Graybar's own services.

The next time *you* need emergency help, make it a point to call your near-by Graybar office. You're sure to get efficient, helpful service — the kind of service that's invaluable in emergencies . . . a necessity in everyday operations.

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GraybaR Everything Electrical

GRAYBAR ELECTRIC CO., INC.
Executive Offices:
Graybar Building, New York 17, N. Y.

IN OVER 100 PRINCIPAL CITIES

share, a year ago. Net income for the third quarter was $1,632,925 compared with $1,107,834 in the same period of 1951. Net income amounted to 70¢ per share on the common stock compared with 54¢ per share in the third quarter of 1951.

In commenting on the 47% gain in net income in the third quarter Pres Don G. Mitchell said that "nevertheless, low prices, higher wage rates and manufacturing costs, and heavy setting up costs for new plants continue to be a deterrent to earnings that are more in keeping with the greater sales volume. Some price controls have been removed and further relief is being sought."

SALES ASSIGNMENTS

COMPANY STAFFS

Day-Brite Lighting, Inc. St. Louis, has made J. A. Foerster its Miami (Fla.) representative. Foerster will be associated with Joseph N. Crevasse, Mandarin, Day-Brite's representative throughout Florida. Prior to this appointment, Foerster was assistant director of engineering for Day-Brite.

Miller Co. Meriden, Conn., has appointed Frank L. Lewis to the newly created post of regional sales manager for the central region. Lewis was formerly field sales engineer in the central Ohio territory for the firm's Illuminating Division. He will make his headquarters at 1131 Atlas Bldg, Columbus, Ohio.

General Electric Co's Lamp Division has appointed Frederick F. Denny as manager of its Midland Sales district with headquarters at Chicago. Denny, who has been attached to the sales staff of GE's Motor City Sales district at Detroit for the past three years, succeeds Donald O. Dice, who has resigned.

Templeton, Kenly & Co. Chicago, has assigned E. A. Zimmerman to direct both operations of its consolidated New York domestic and export offices. Zimmerman, previously manager of New York domestic sales, will continue to serve Simplex Jack distributors and users in that area and will expand personal contacts in the export field. New quarters are located at 60 E. 42nd St., New York.

Westinghouse Electric Corp has named Alfred Ernest Lambert, Jr. New England manager of distribution apparatus sales. In his new post at Boston, Lambert will be in charge of sales of distribution apparatus to electric utilities and municipalities in New England. With Westinghouse since 1939, Lambert has served as a lighting application engineer with headquarters in Boston since 1946.

Libbey-Owens-Ford Glass Co's Fiber Glass Division has assigned Richard Harper as a sales representative to its Boston office. Harper will work directly with Hilary F. Smart, district manager, in the New England area.

NEW ELECTRICAL CONSTRUCTION

A weekly selection of U. S. electrical construction projects announced by private and government utility systems involving more than $70,000. Also listed are major industrial and construction jobs where electrical work is indicated or implied

UTILITIES

Proposed Construction

Idaho — Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., generators for Palisades Power Plant, Palisades Proj., Spec. DC 3772. Extended date. L. N. McClellan, ch. engr.

Kansas—Norton - Decatur Electric Co-operative Co., Norton, 388 mi. rural distr. lines, Norton, Decatur, Phillips, Rooks, Graham and Sheridan Counties. $575,000. Raymond H. Reed & Co., Columbus, Neb., consult. engrs.

Minn., St. Cloud—Granite Broadcasting Co. (WJON), 522 Lincoln Ave. S.E., television station. $200,000. Charles B. Persons, 2219 Vermillion Rd., Duluth, consult. engr.

Nebraska — Howard Greeley Rural Public Power Dist., St. Paul, 96 mi. rural distr. lines, 3 gyson wells system improvs., 32 mi. transmission lines, headquarters facilities, in Howard and Greeley Counties. $600,000. Raymond H. Reed & Co., Columbus, consult. engrs.

N. H., Portsmouth—P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., electric test laboratory, Naval Shipyard, Spec. 30306. $2,079,000. Plans deposit $110. Anderson & Beckwith, 11 Beacon St., Boston, Mass., archts. Extended date.

N. C., Asheville—Skyway Broadcasting Co. (WLOS), Box 2389, Battery Park Hotel, television station, $441,000. John Creutz, Bond Bldg., Wash., D. C., consult. engr.

N. D., Fargo—North Dakota Broadcasting Co., Inc., c/o KCJB, Minot, television station, $152,000. Lloyd R. Amoo, 5702 Grand St., Des Moines, Ia., consult. engr.

O., Fremont — Wolfe Broadcasting Corp. (WFRO), 907 West State St., television station. $145,000. A. R. Bitter, 4292 Monroe St., Wash., D. C., consult. engr.

Okla., Ponca City—City, Ponca City, voted bonds, power plant exten. $550,000. C. E. Norton, c/o owner, engr.

Ore., Portland — Pioneer Broadcasters, Inc. (KGW), 1320 S.W. Broadway, television station. $530,000. Harold C. Singleton, 2073 S.W. Park St., consult. engr.

Pa., York—Helm Coal Co. (WNOW), Box 226, television station. $176,000. John H. Mullaney, 1757 K St. N.W., Wash., D. C., consult. engr.

South Dakota—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., power transformer, power circuit breakers and air switches for Rapid City Sub-station, Transmission Div., Missouri River Basin Proj., Inv. No. DS-3795.

Tennessee—U. S. Eng., 303 Federal Office Bldg., Nashville, Zone 1, furnishing, installing three 12,000 kw generators for Cheatham hydro-electric power plant, the Cheatham Proj. is located at mile 148.7 on Cumberland River approx. 23 mi. upstream from city of Clarksville, Serial No. CIVENG 40-058-53-12.

Tex., Lubbock—Texas Telecasting Inc., Whiteside Bldg., plans by Butler-Brasher Co., 412 Avenue M, 1 and 2 story haydite block television station, 1,000 ft. antenna tower, air-conditioning, 12 in. outside walls, 4 and 8 in. interior partitions. $300,000.

Va., Richmond—Larus & Bros. Co., Inc. (WRVA), 22 and Cary Sts., television station. $874,000. Paul Godley Co., Old Quarry Rd., Upper Montclair, N. J., consult. engr.

Washington — Bureau Reclamation, Dpt. Interior Bldg. 53, Denver Federal Center, Denver, Colo., hydraulic turbines and hydraulic - turbine - driven pumping units for Chandler Power and Pumping Plant, Kennewick Div., Yakima Proj. DS-3805. L. N. McClellan, ch. engr.

Washington — Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., power transformer and power-circuit breakers for Chandler Power and Pumping Plant Switchyard, Kennewick Div., Yakima Proj. Inv. No. DS-3802. Extended date.

W. Va., Wheeling—Storer Broadcasting Co. (WWVA), 199 Pierce St., Birmingham, Mich., television station, $1,232,000. A. Earl Cullum, Jr., 4716 Lemmon Ave., Dallas, Tex., consult. engr.

Low Bidders & Contracts Awarded

Missouri — James H. Drew Corp., Sedalia, Mo. CA $120,581. 18 mi. 69 kv rural distr. lines, Fremont and Page Counties. Atchison-Holt Electric Co-operative, Rock Port, Mo. Henningson, Durham & Richardson, Standard Oil Bldg., Omaha, Neb., engrs. Bids Oct. 16.

Oklahoma—B-Line Constr. Co., 1st. Natl. Bank Bldg., Oklahoma City, Okla., CA, $531,966. K.V. sub-stations, Anadarko, OKLAHOMA. Western Farmers Electric Co-operative, Anadarko, Okla. Bids Aug. 26.

Oregon—Cascade Constructors, Box 774, Pasco, Wash., LB $3,254,795. Schedule A, power house and fishways machines; LB $272,395. Schedule B, services of crane operator. University Brick & Tile Co., 1213 E. 40th St., Seattle, Wash., LB $200,158. Schedule C, quarry and ceramic tile, McNary Dam, Umatilla Co., Civeng 45-164-53-17, U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Oct. 20.

S. C., Charleston—W. Harold Butt, Wanna Heights, Charleston, S. C. CA $200,000. TV tower and studio. Station WCSC-TV, Francis Marion Hotel, Charleston, S. C.

INDUSTRIAL, COMMERCIAL & PUBLIC BUILDINGS

Proposed Construction

Calif., San Francisco — Equitable Life Assurance Society of U. S., 315 Montgomery St., plans by W. D. Peugh, 233 Montgomery St., 16-story office with 10-story tower, on 121x161-ft. site, downtown area, $10,500,000.

Colo., Golden — Jefferson County School Dist. R-1, 11 and Jackson Sts., voted $10,000,000 bonds 15 grade schools and 4 high schools.

Del., Newport and Edgemoor—E. I. du Pont de Nemours & Co., Inc., du Pont Bldg., Wilmington, chemical plants expansion. $15,000,000. H. M. Gordon, c/o owner, dir. Constr. Div.

Fla., Jacksonville — Prudential Life Insurance Co., 763 Broad St., Newark, N. J., plans by Kemp, Bunch & Jackson, Florida Theatre Bldg., Southeastern Office bldg., $10,000,000.

Neb., Omaha—Bd. Regents, University of Nebraska, Lincoln, new building, Unit 3, to rear of present bldgs. at University of Nebraska Medical College and Hospital, for 220-addnl. beds, training facilities for students and admin. offices. $5,200,000.

N. Y., New York—Dpt. P. Wks., Municipal Bldg., Zone 7, plans by Kahn & Jacobs, 2 Park Ave., Zone 16, Proj. WL-26, youth house shelter for delinquent boys, Spoffard Ave. $5,000,000.

Tex., Daingerfield — Longhorn Ordnance Works, Daingerfield, powder propellant plant. $20,000,000. Thiokol Corp., 780 N. Clinton Ave., Trenton, N. J., and R. W. Booker & Assoc., 804 Pine St., St. Louis, Mo., archts.-engrs.

No. 8 IN A SERIES

a Sub-Station Engineer ASKS—

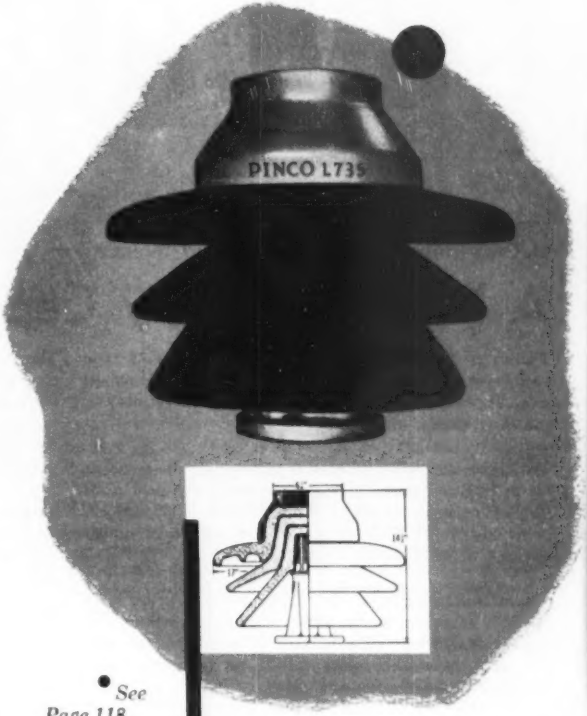
"what are the advantages of a larger second shell on the PINCO 735 switch and bus unit?"

here's the answer...

Prior to the introduction by Pinco of this improved, larger second shell design, all switch and bus units were susceptible to cascading in stacks, which of course was not desirable. Today, however, the Pinco 735 Switch and Bus Stacking Unit, with its larger second shell, improved center design and more rugged porcelain, shows far superior flashover performance and eliminates cascading. In addition, it also provides extra leakage protection and increased mechanical strength.

another PINCO "FIRST"

The design characteristics shown in the Pinco 735 have proven their superiority by "*right on the job*" performance in years of widely varied service in all voltages. The abilities and facilities responsible for this and other outstanding examples of Pinco pioneering leadership in insulator and special porcelain design and manufacture, are at your service. We invite you to—PUT IT UP TO PINCO!



• *See Page 118, Pinco Catalog No. 49 for complete electrical and mechanical specifications*

PINCO 735 SPECIFICATIONS

Dry Flashover	160,000 volts
Wet Flashover	95,000 volts
Leakage Distance	33"
Torsion Strength in lbs.	40,000
Tension Strength, lbs.	20,000

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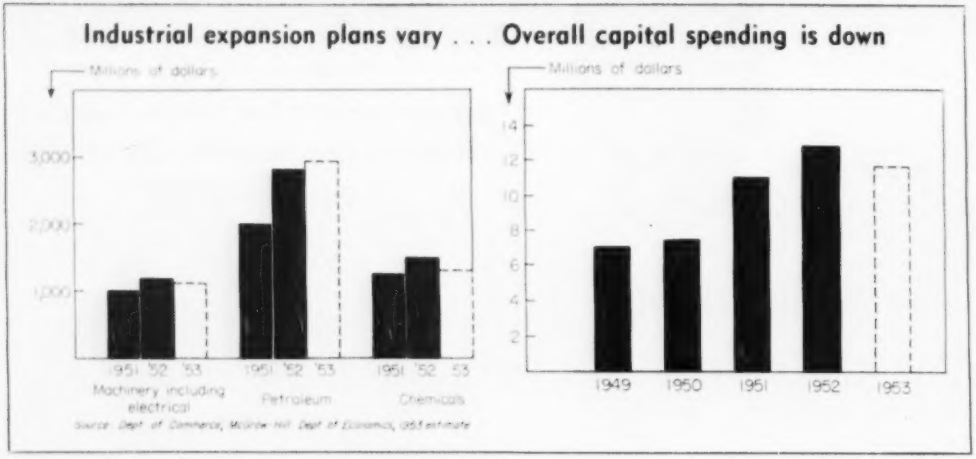
ELECTRICAL BUSINESS OUTLOOK



McGraw-Hill Economics Department forecasts at least

A Year of Heavy Capital Spending

There's another year—at least—left in the current capital investment boom. Industry now plans to spend almost as much for new plant and equipment in 1953 as in 1952, and more than it did in 1951.

That's the surprising (to many) fact which shows up in the preliminary survey of manufacturers' investment plans for 1953, just completed by the McGraw-Hill Department of Economics. This is the first real indication of capital spending plans for next year.

Manufacturing industries will spend about 8% less than in 1952, according to the survey. Since expenditures by non-manufacturing industries are generally expected to rise, total capital expenditures will not be off much if present plans are carried out.

That "if" is bigger than usual this year. The McGraw-Hill survey was made earlier than usual this year—and there's always an extra element of doubt in looking so far ahead. The survey is based on a smaller sample than usual. And many of the plans reported are just preliminary thinking that still hasn't cleared the budget committee.

No Sharp Cuts Expected . . . But the general trend is clear: Business is not thinking in terms of a sharp cutback in capital spending. It's going ahead with high-level investment programs. And that means that one of the chief props under general business prosperity is still in sound condition—despite earlier fears among many economists.

There's plenty of time for these plans to change between now and mid-1953. But capital expenditures in the first half of next year will almost surely be close to present levels; and it's hard to envision a collapse even after mid-year with so much spending already underway.

The survey makes two main points for the power industry. First, it's a tip that business in general is likely to hold up well in 1953—since this key element of demand will stay strong. And, secondly, the survey is a guide to the outlook for capital spending in specific manufacturing industries.

Largest declines planned are in transportation equipment (37%) and steel (17%). Considerably less spending than in 1952 is also planned by most machinery companies and by automobile companies.

However, 1953 plans are still close to—or higher than—actual expenditures in 1951 for all these industries.

Electrical Manufacturers' Budgets Up . . . And one group of durable goods makers, the electrical manufacturing industry, would like to spend 15% more for capital goods in 1953. Its program ran behind schedule in 1952.

Plans in industries making non-durable goods show widely varying trends. Oil companies expect to spend more for new wells, refineries, and pipelines. Their plans for spending in 1953 call for a 5% increase over 1952.

The chemical industry, on the other hand, is planning to spend less for new plant and equipment—even though it is generally regarded as a "growth" industry. The reason is that expansion in 1952 was so large that, even with further growth in chemical markets, there won't be need to expand capacity at the same pace next year.

However, the drop in spending for chemicals is exaggerated by a very severe drop in the plans of rayon companies. Obvious over-capacity, plus a fairly severe squeeze on profits, bar spending for new equipment in this industry.

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167 kva to 500 kva Distribution Transformers

because –

They are designed and built to withstand severe operating conditions and excessive load demands efficiently and without interrupting service. This is true because Moloney incorporates these superior design features in all of its products.

1. Higher factor of safety

Liberal use of insulating materials and coil cooling ducts makes possible greater performance dependability under overload conditions for a longer time. Greater mechanical strength permits them to withstand severe overload conditions without damage or mechanical distortion.

2. Improved short-time overload capacity

Distribution transformers, during peak load periods, may carry loads greatly in excess of rated capacity. The lower winding temperature gradient of Moloney Transformers makes it possible for them to carry severe overloads without seriously affecting their operating life.

3. Surge-proved core-and-coil design

All Moloney transformers are of surge-proved core-and-coil design tested on our 3,600,000 volt surge generator. Periodic surge-testing of standard designs assures continuous quality control. With Moloney Distribution Transformers you are sure of high resistance to the effects of lightning surges.

MDDB-20

Illustrated at left: Moloney Distribution Transformer rated 500 Kva, single-phase, 60 cycles, high voltage 7200 volts, low voltage 240x480 volts.

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Thermalite
OVERLOAD INDICATOR

. . . gives you today's biggest value in overload protection

Spots overloads quickly . . . But it won't interrupt service

Here's real ease in overload detection. Check the brilliant light of the *Thermalite* overload indicator right from your service truck. It's visible from hundreds of feet away to keep you posted on load conditions in hard-to-get-at locations.

The *Thermalite* overload indicator shows you when your transformer is overloaded, but it won't interrupt service. That means you can schedule transformer replacements or load rearrangements during daylight hours . . . and do away with costly emergency measures.

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